VINTAGE WARBIRDS No 9

WORLD WAR ONE in the Air

RAYMOND LAURENCE RIMELL

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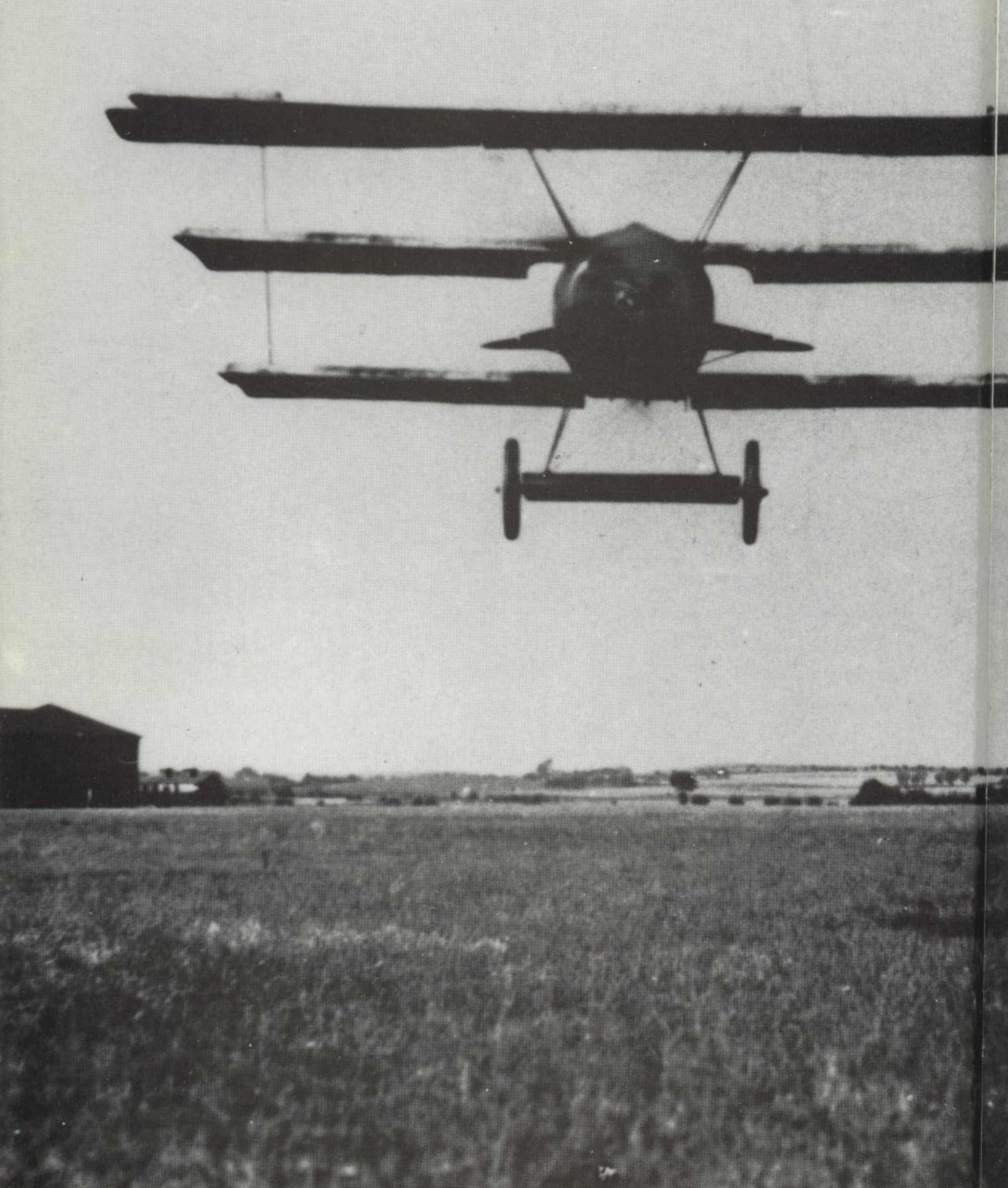
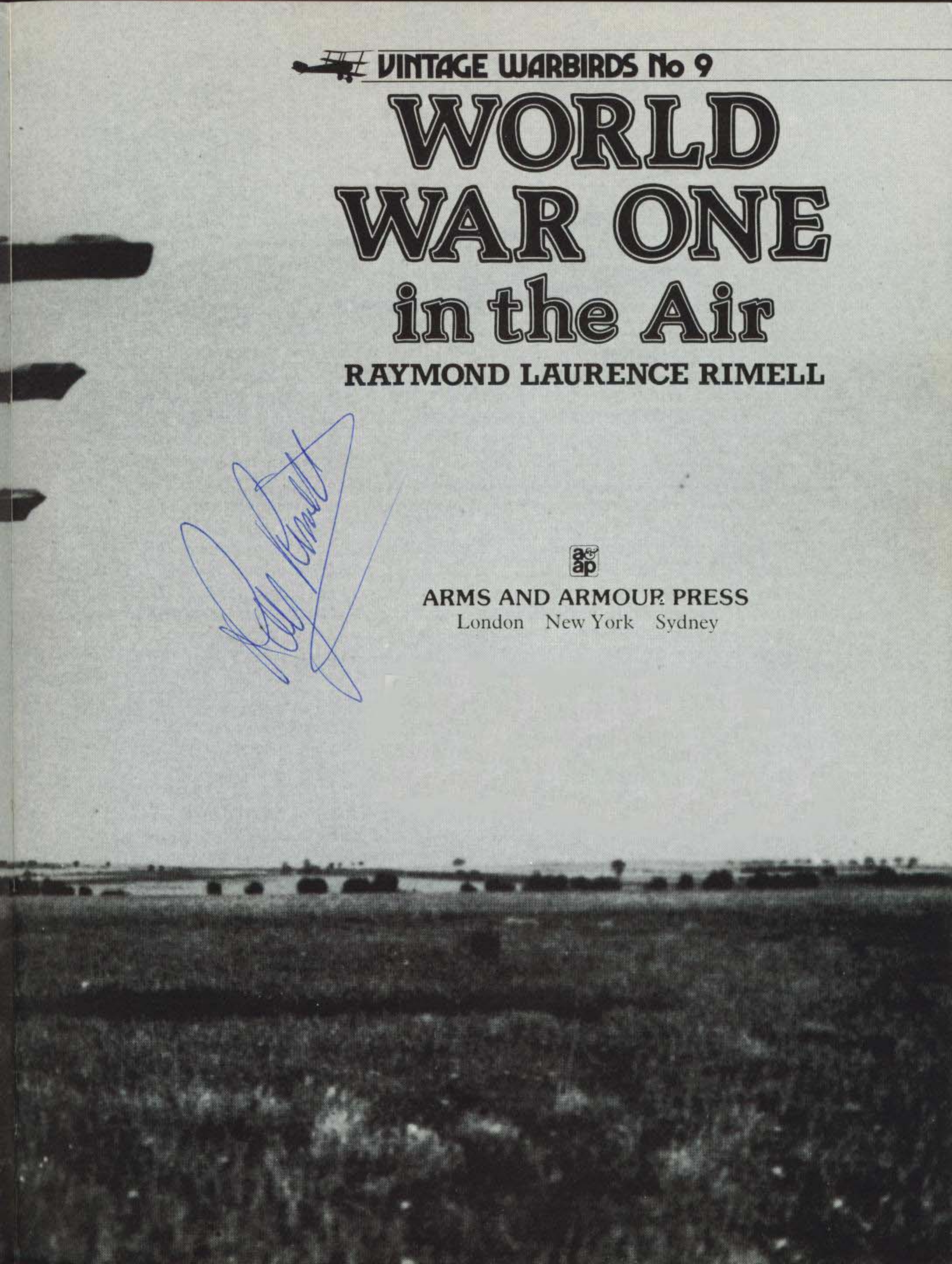
Cover illustration: A Caproni Ca.5 bomber of the Italian Air Corps. The Ca.5 (later designated Ca.44) had three engines developing a total of 600hp and for this reason was often known as the 'Ca.600'. A few machines of this type were used by the Italian XVIII Group as night bombers and served in France from February 1918 to the Armistice. (A. Church via JMB/GSL Collection)

1. The Fokker DrI was the only really successful German triplane design and remains one of the best-known aeroplanes of 'The Great War'. This familiar photograph is of F1 102/17, one of three pre-production Triplanes and subsequently flown in action by Manfred von Richthofen.





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Introduction

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Air-to-air photography is taken for granted these days, and modern aviation magazines are rich in exciting 'in-flight' studies to capture the imaginations of enthusiasts. When we go back to the early years of aviation, however, material of this nature is particularly scarce, which is hardly surprising when one considers the limited availability of compact cameras in the early years of the century. Nevertheless, many photographs showing genuine First World War aeroplanes in their natural element have survived the ravages of time, and a selection of the best appear within these pages – several, it is believed, for the very first time.

The emphasis on German subjects does not reflect a bias on the part of the author, but is due mainly to a much greater amount of such material being available, and a more even balance could only have been achieved by using a large number of photographs that have already been published. One must also appreciate that unofficial wartime photography 'in the field' by British servicemen was not allowed, and those pictures that were taken surreptitiously, usually with Kodak VP cameras, are of poor quality; the Germans, it seems, were not so strict. Since the author believes that most First World War aviation enthusiasts would prefer to see fresh material whenever possible, several photographs have been included purely for historical interest rather than aesthetic appeal. Thus, amongst the more popular Fokkers and Sopwiths, some extremely rare subjects are included, for example the Linke Hoffman R-Planes, the Port Victoria PV8 and the ungainly twin-boom Otto biplane.

So unique a collection could not have been presented without the generous provision of material from fellow enthusiasts the world over. Thanks are due, therefore, to Mrs. A.J. Arkell, A.E. (Ed) Ferko, P.M. Grosz, Dr. V. Koos, C.A. Owers, W. Schulz and the staff of the RAF Museum library; last, but by no means least, I am particularly indebted to J.M. Bruce and G.S. Leslie. All uncredited photographs are from the Albatros/P.L. Gray Archive.

Raymond Laurence Rimell

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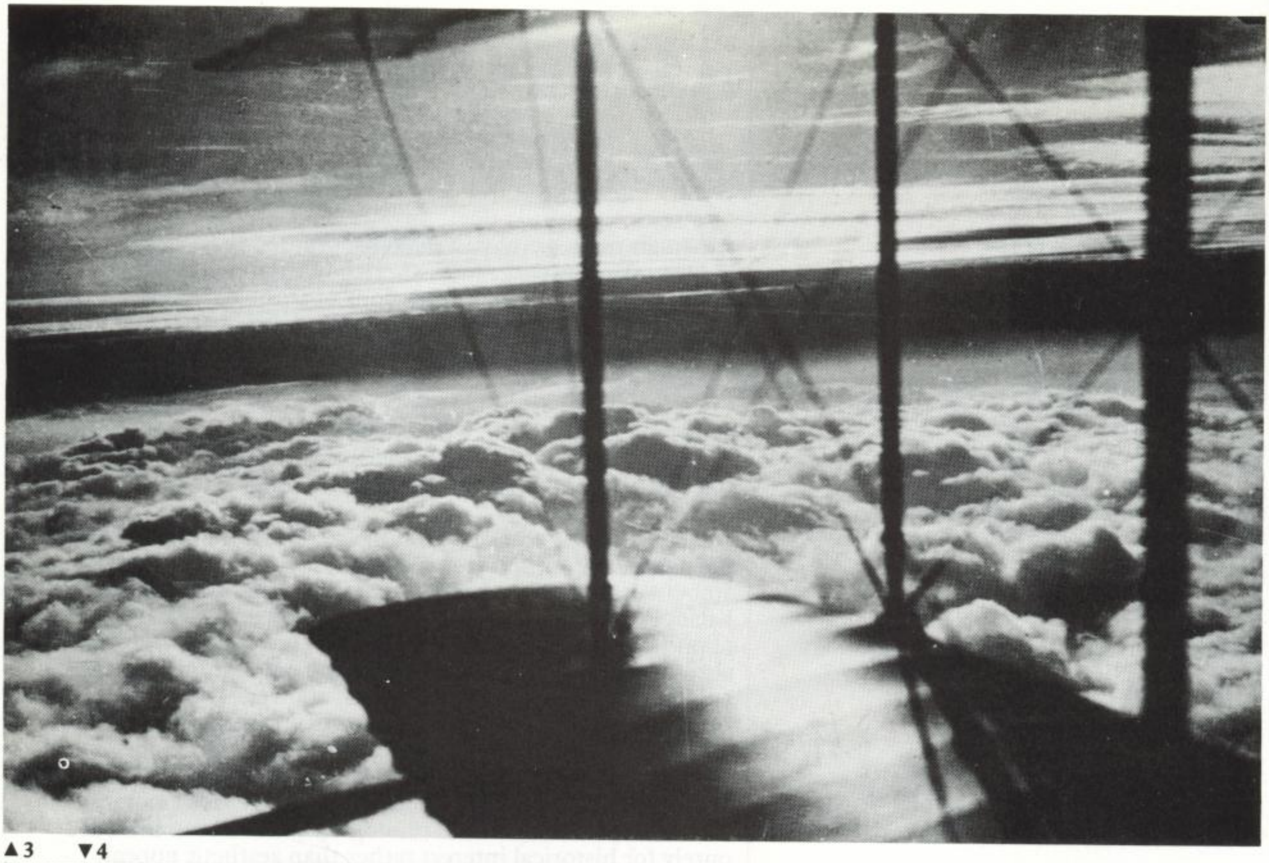
2. The de Havilland DH2 was designed early in 1915. Initially pilots disliked the machine, but once its handling characteristics were understood the DH2 came to be recognized as a sturdy and manoeuvrable fighting scout. Equipped with DH2s, No. 24 Squadron became the first single-seat fighter unit to go to war. A home defence machine is illustrated.



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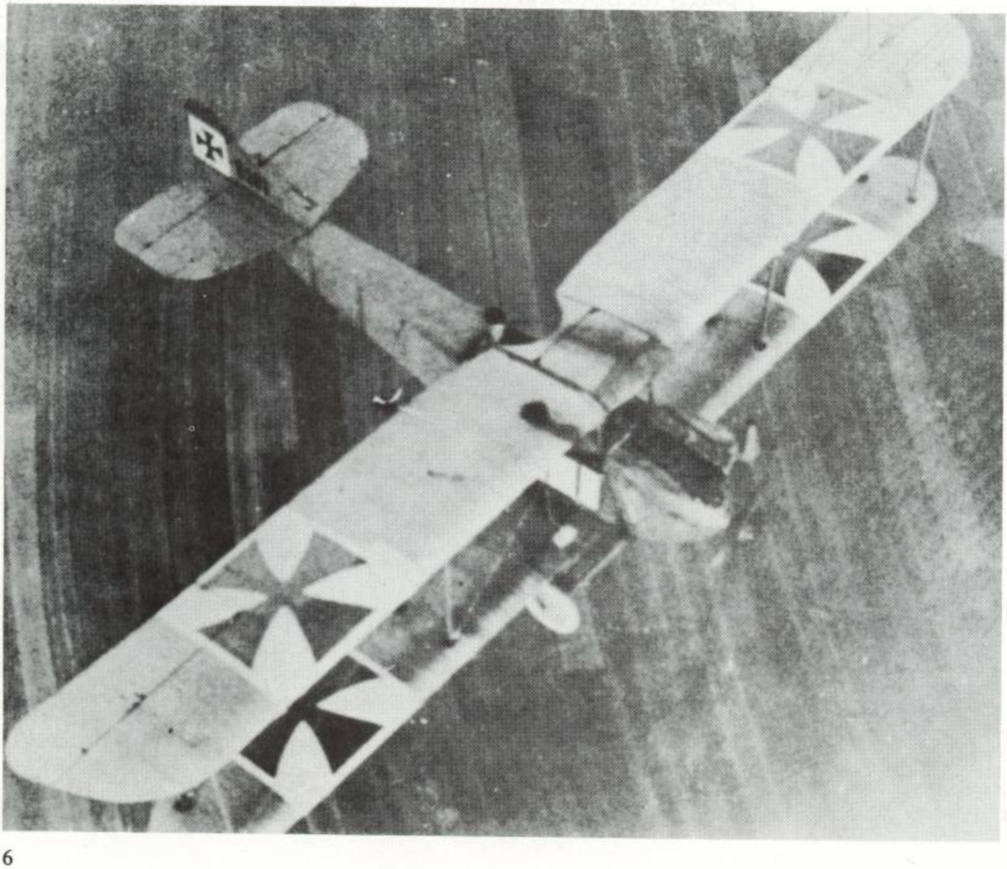
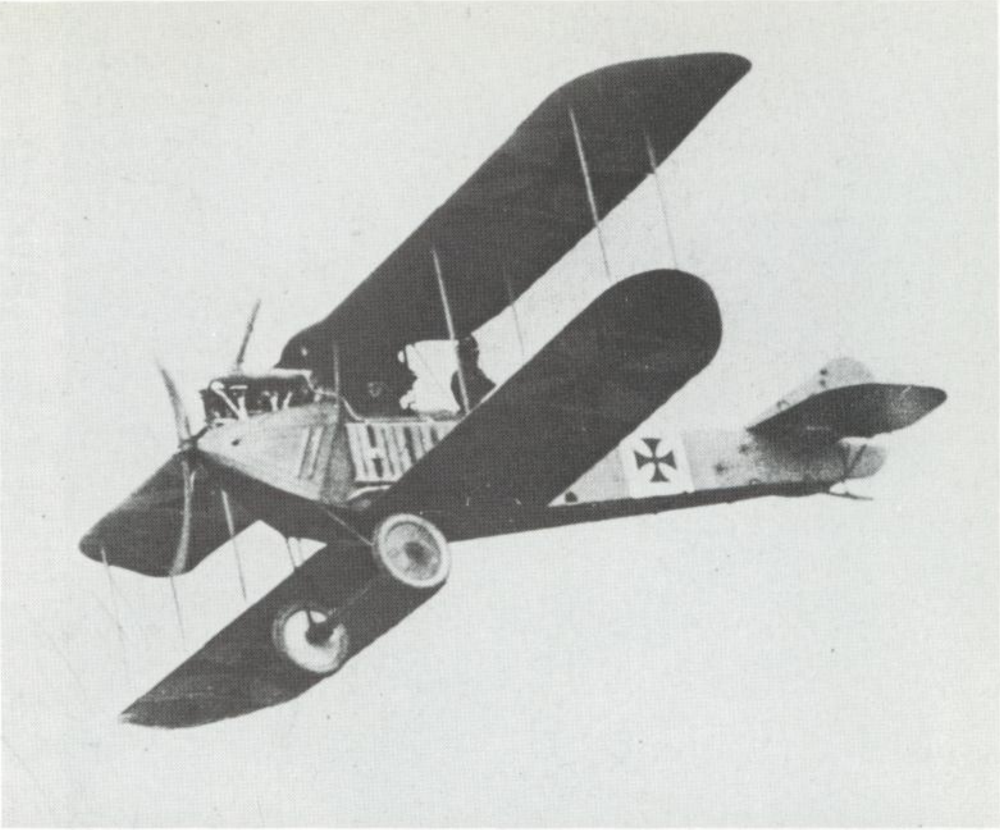


3. An unidentified German two-seater military aircraft, photographed during the First World War.
4. A well-weathered AEG BII, serial number B223. Powered by a 120hp Mercedes DII engine, the 1914 BII was used in small numbers on unarmed reconnaissance patrols and became the forerunner of the later CI. Markings on the upper surface of lower wings were a common feature of early German machines. (W. Schulz)

5. An AEG CI of *Fl.Abt.58*. The CI was introduced in 1915; it was virtually an up-rated BII with a manually operated machine gun in the rear cockpit for the observer. Note the deep engine panel cooling louvres and the prominent fuselage-mounted radiators flanking the pilot's cockpit.

6. An AEG CI, serial number C330/15, showing evidence of extensive repair work on its flying surfaces. These early German machines were often doped overall in a glossy white or a very pale grey finish which soon weathered in service. This particular example bears white fields under the national insignia markings.



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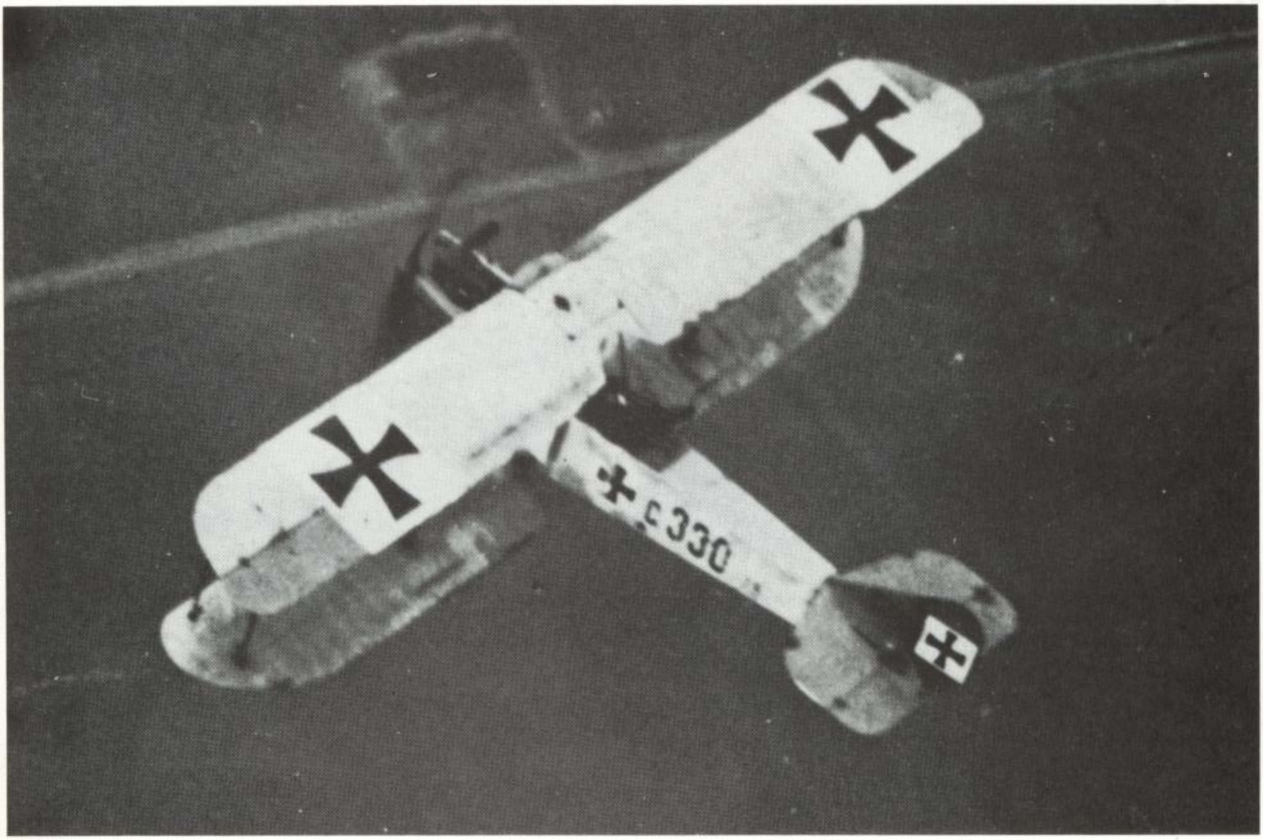

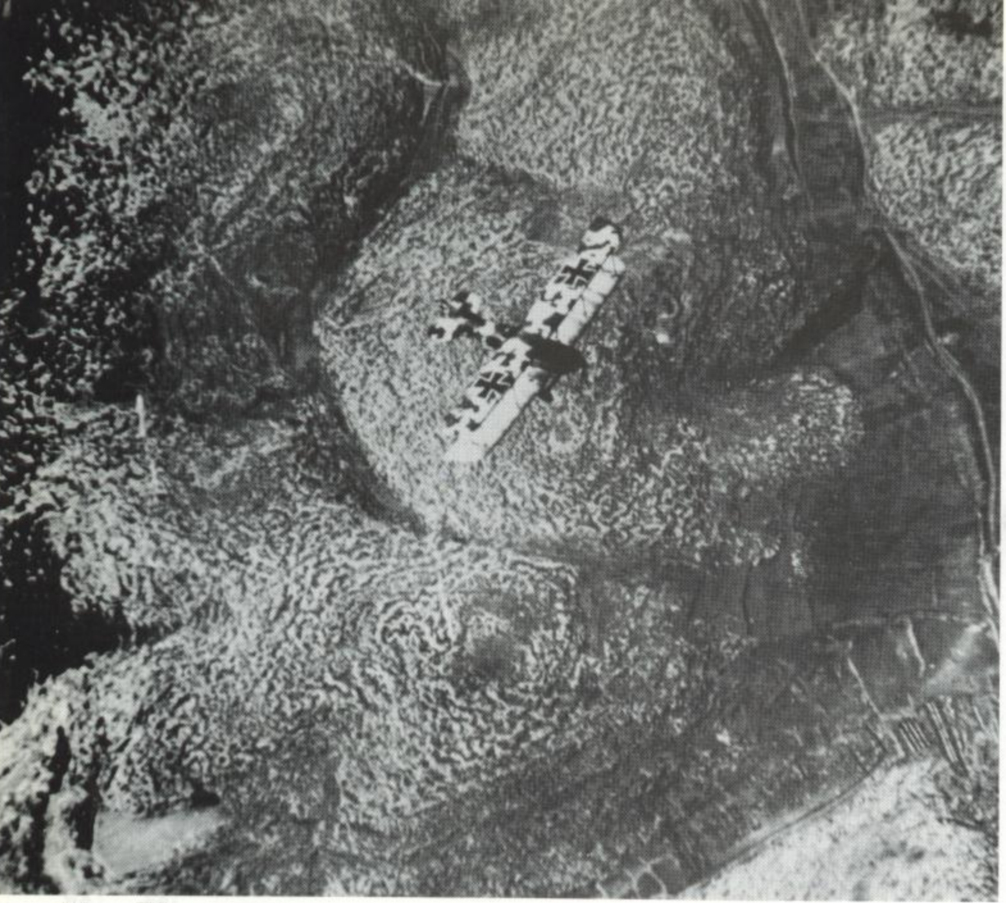

7. The mottled camouflage of this AEG CIV of *Fl.Abt.304* was remarkably effective for operations over Palestine in 1917. The CIV performed useful service with many front-line units and at least 40 were still on strength as late as August 1918. Apart from its wooden wing ribs, the CIV was built almost entirely of steel tubing.

8. An OAW-built Albatros CI. Designed in 1915 to take advantage of the more powerful engines then becoming available, the CI represented little more than an enlargement of its B-type forebears. The CI proved to be a reliable machine and was used for reconnaissance, artillery observation, bombing and photography.

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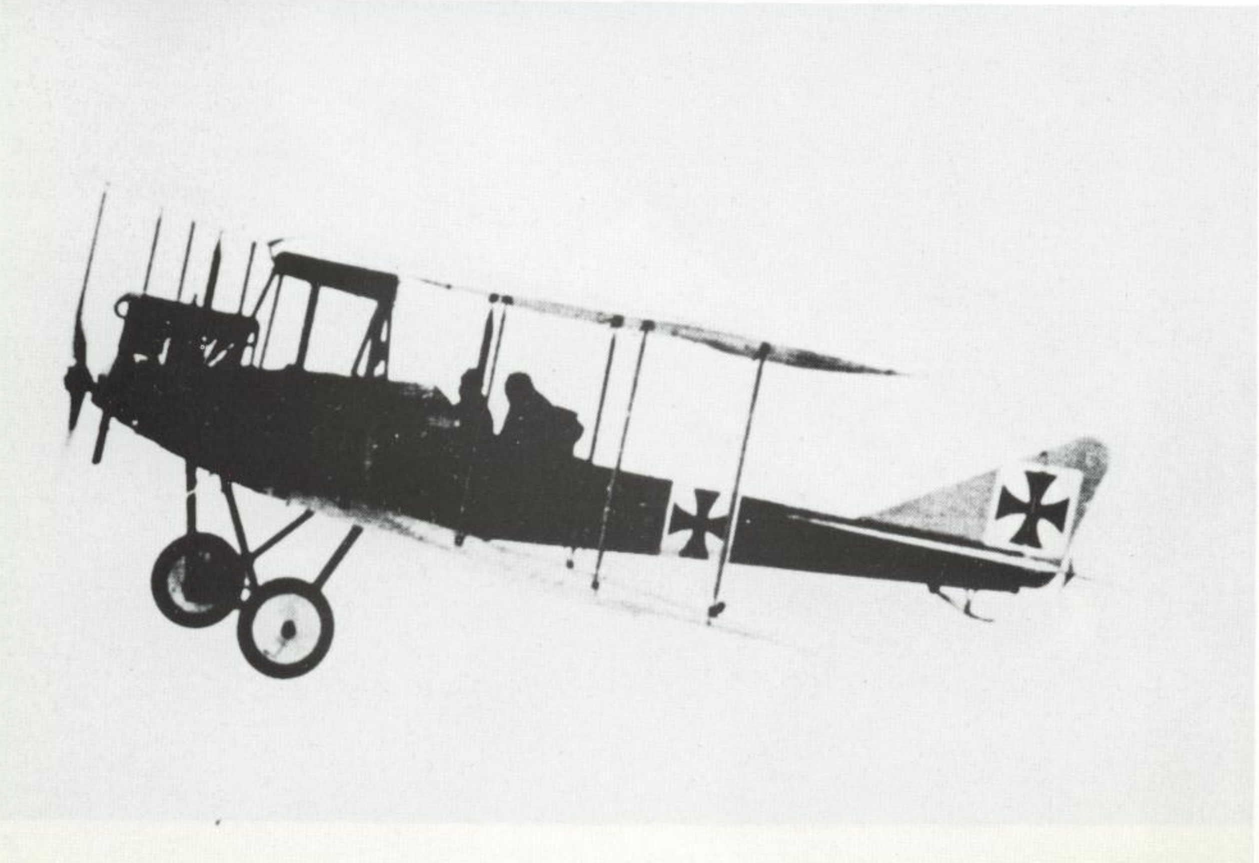

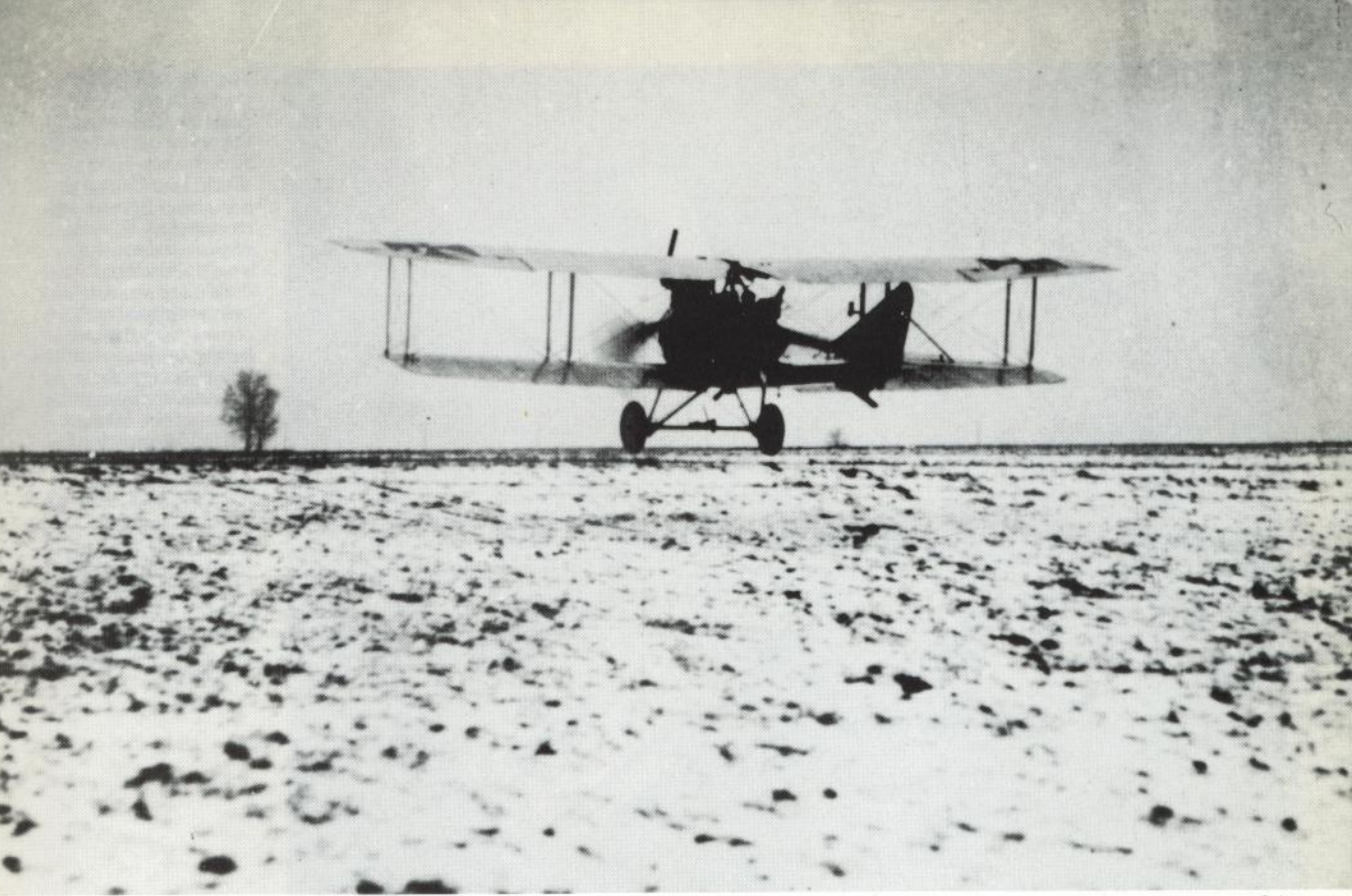

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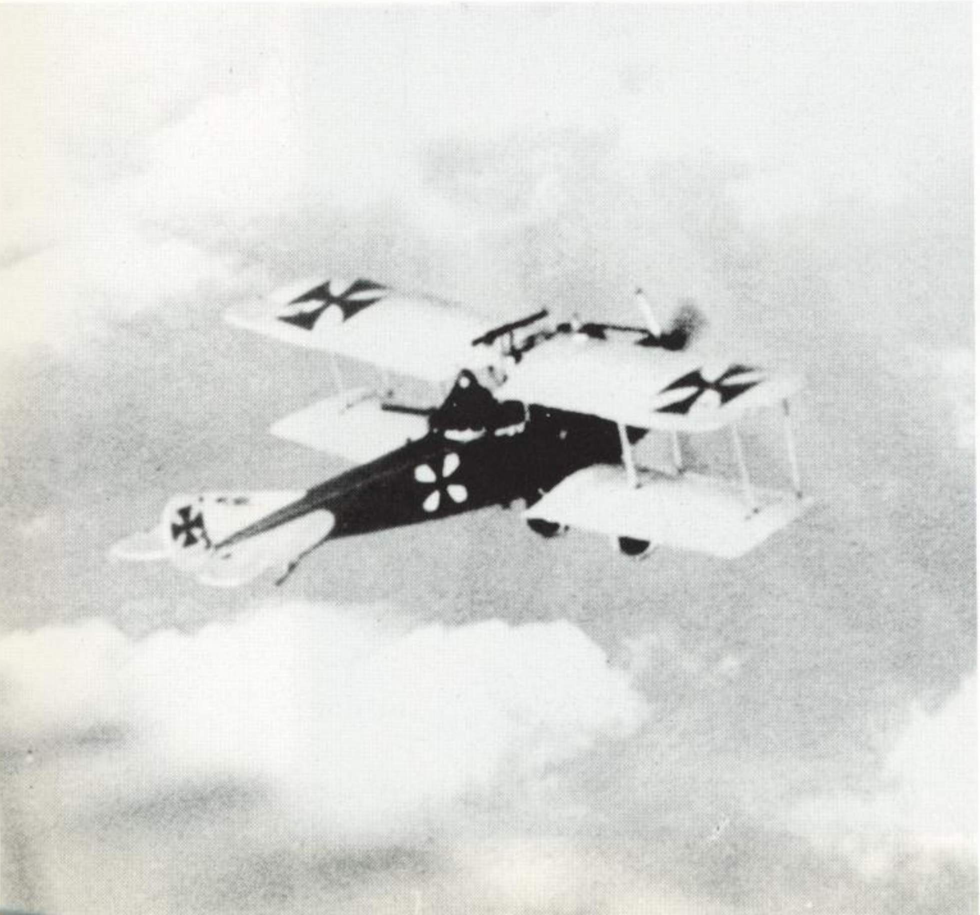

9. An Albatros CI trundles across a snow-covered aerodrome in this portrait of a First World War 'classic'. The CI was a powerful machine for its day and very robust, factors which endeared it to its crews. Many of Germany's leading air aces flew CIs early in their careers, including Boelcke and Richthofen.

10. An Albatros CIII, its dark-stained fuselage contrasting starkly with the light-coloured flying surfaces. The CIII was the most prolific of all the Albatros two-seaters and one of the finest machines of its kind. Note the non-standard machine gun mounting on the centre-section of the upper wing, positioned thus to enable the weapon to clear the airscrew arc.

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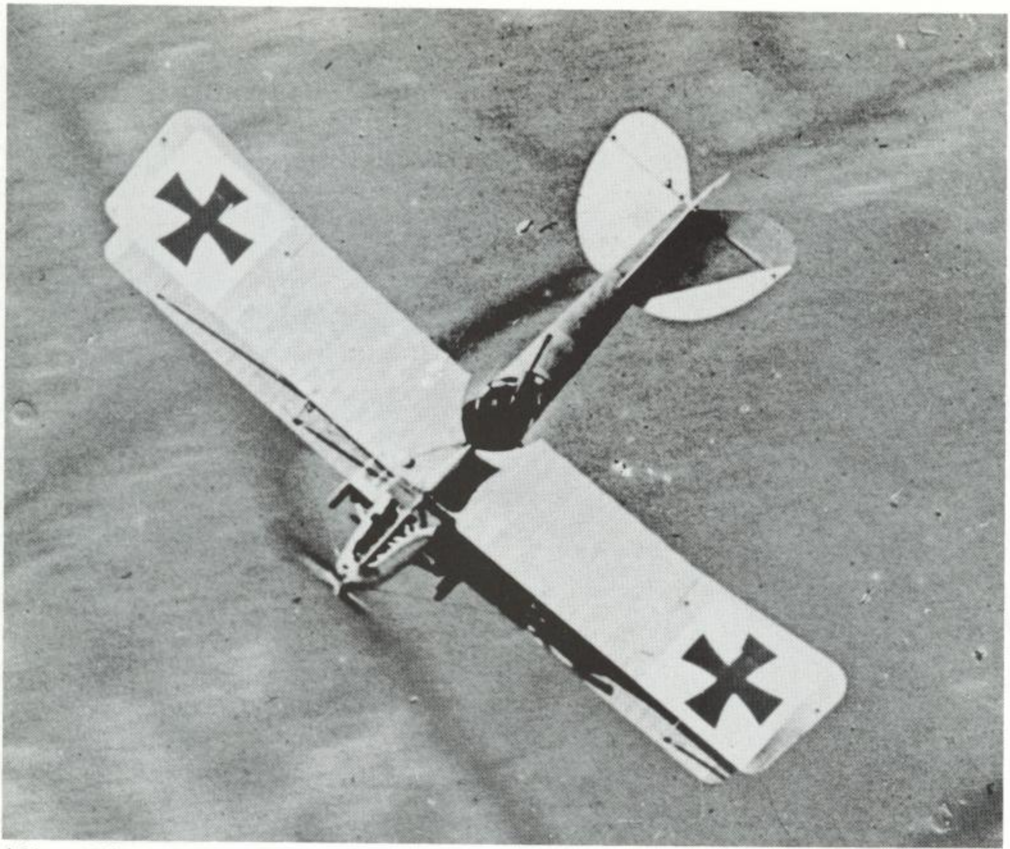

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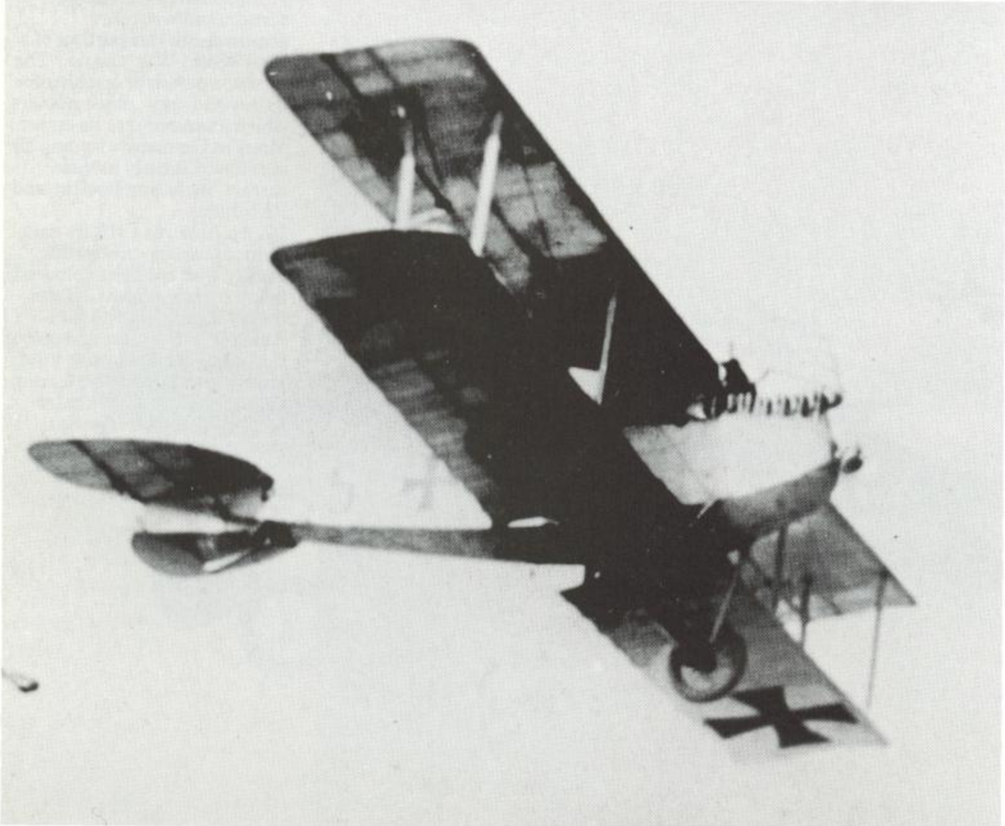
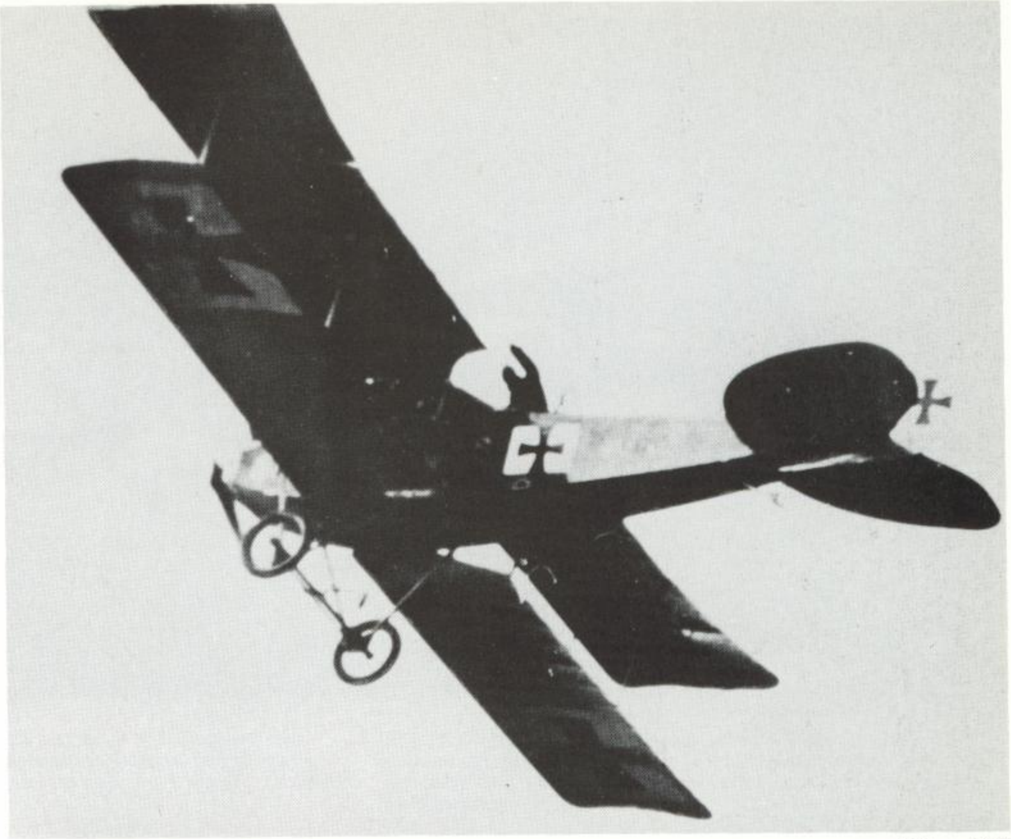


11. This well-known photograph of an Albatros CIII is one of the best available air-to-air views of a First World War German aeroplane. Allied pilots treated the CIII with respect, for with its wooden fuselage it was difficult to shoot down, being able to absorb considerable damage before any real structural failure occurred.

12. Another interesting aspect of the Albatros CIII. This machine appears to have clear-doped, fabric-covered flying surfaces, with the wooden structure visible. The CIII was fitted with an early form of synchronized, forward-firing machine gun for its pilot, and was one of the first C-types so armed.

13. While being used mainly for reconnaissance duties, the CIII often carried a small bomb load, although the lack of accurate sighting equipment made its strategic use as a bomber fairly ineffective. The CIII was also used for artillery spotting when the necessary radio equipment was installed.
14. A splendid study of an Albatros CVII with red-brown and green camouflage applied to all the uppersurfaces. The CVII was a reliable machine and was widely used for reconnaissance and artillery observation patrols towards the end of 1916; by February the following year some 350 were in service on all fronts.



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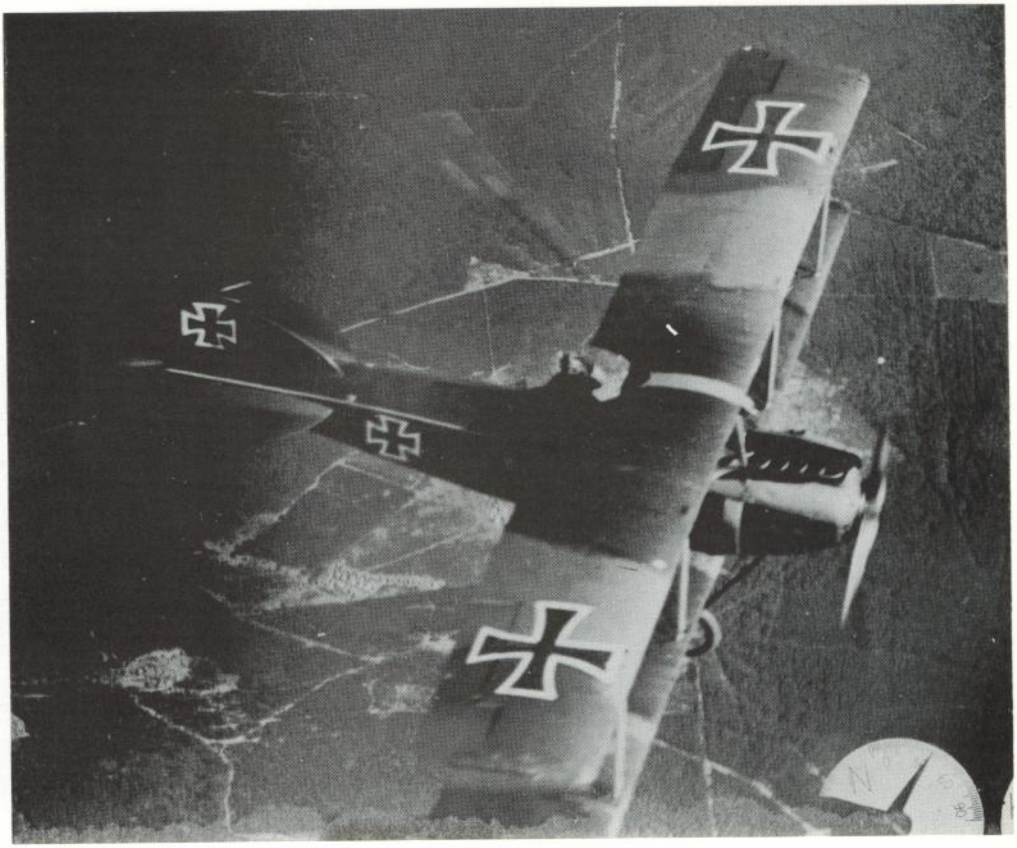

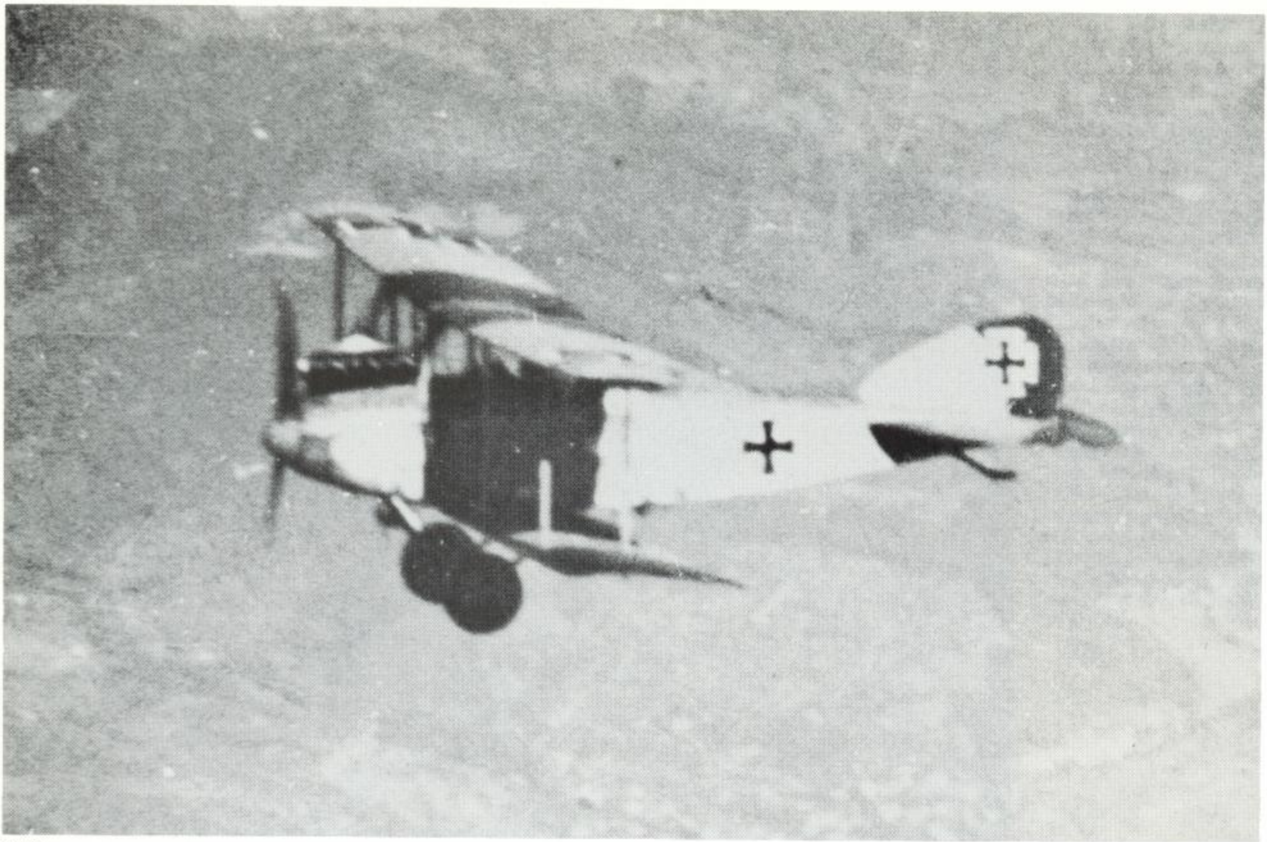

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15. The CVII was distinguishable from the CV types by its engine cylinder block which protruded well above the metal nose panels, as emphasized in this photograph. The aircraft was reported to be easy to fly and well-liked by its crews. Note the plain varnished fuselage and fin of this machine.

16. The Albatros CXII of 1917 was one of the company's most elegant two-seater designs, yet the overall performance was not greatly improved despite the refinement of the fuselage design. The problem lay with the inadequate wing sections of the time, an efficient lift/drag ratio having yet to be realized.

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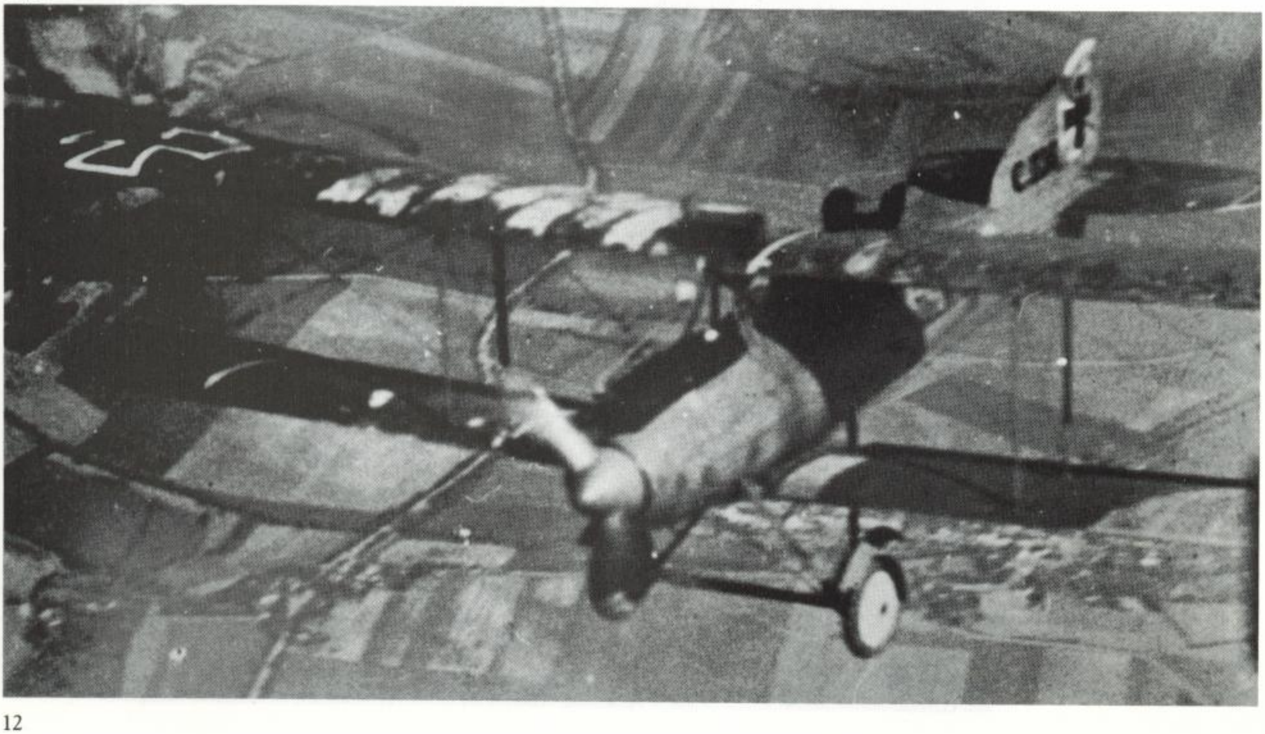

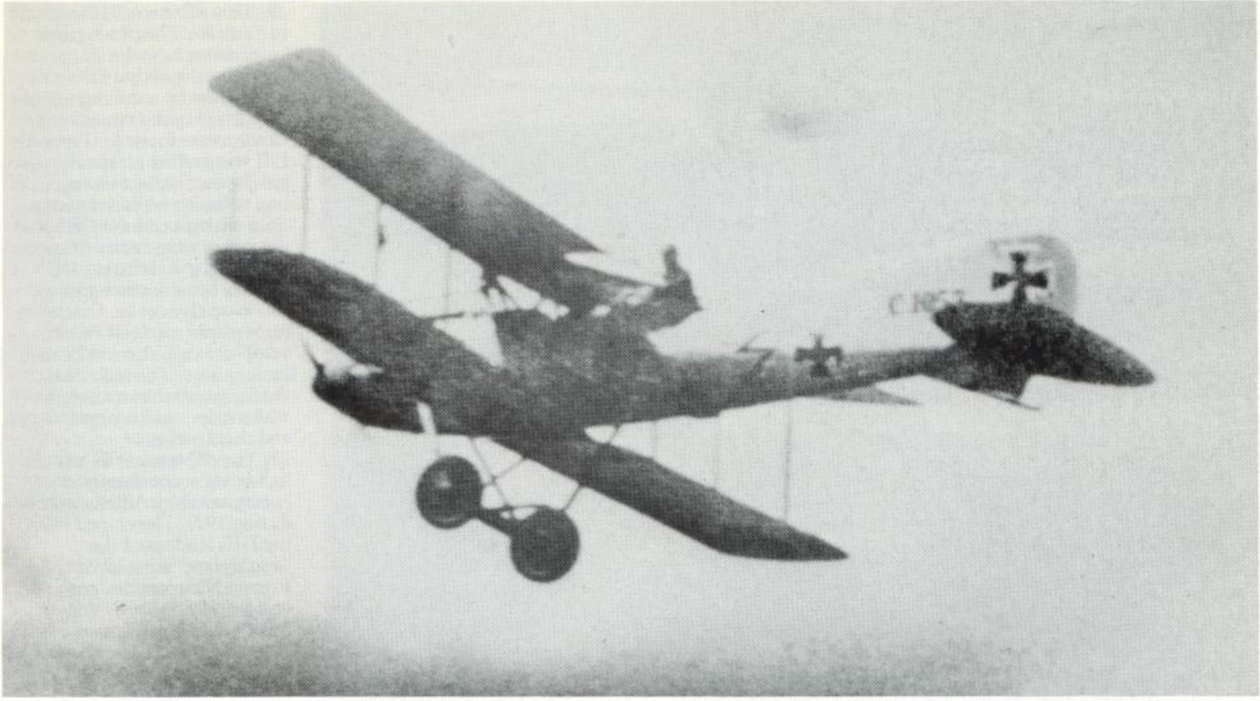

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17. The CXII enjoyed widespread service on the Western Front with *Fl.Abt.* and *Fl.Abt.(A)* Flights during the last year of the war and remained in operational service up until the Armistice. Powered by a 260hp Mercedes DIVa engine, the CXII could attain a maximum speed of 109.4mph.

18. An LVG-built Albatros DII fighter of *Jasta 16b* on patrol. The bands on the wings are part of the camouflage pattern and not personal or unit identity stripes as has often been stated hitherto. Developed from the DI, the DII was a formidable machine for its time.

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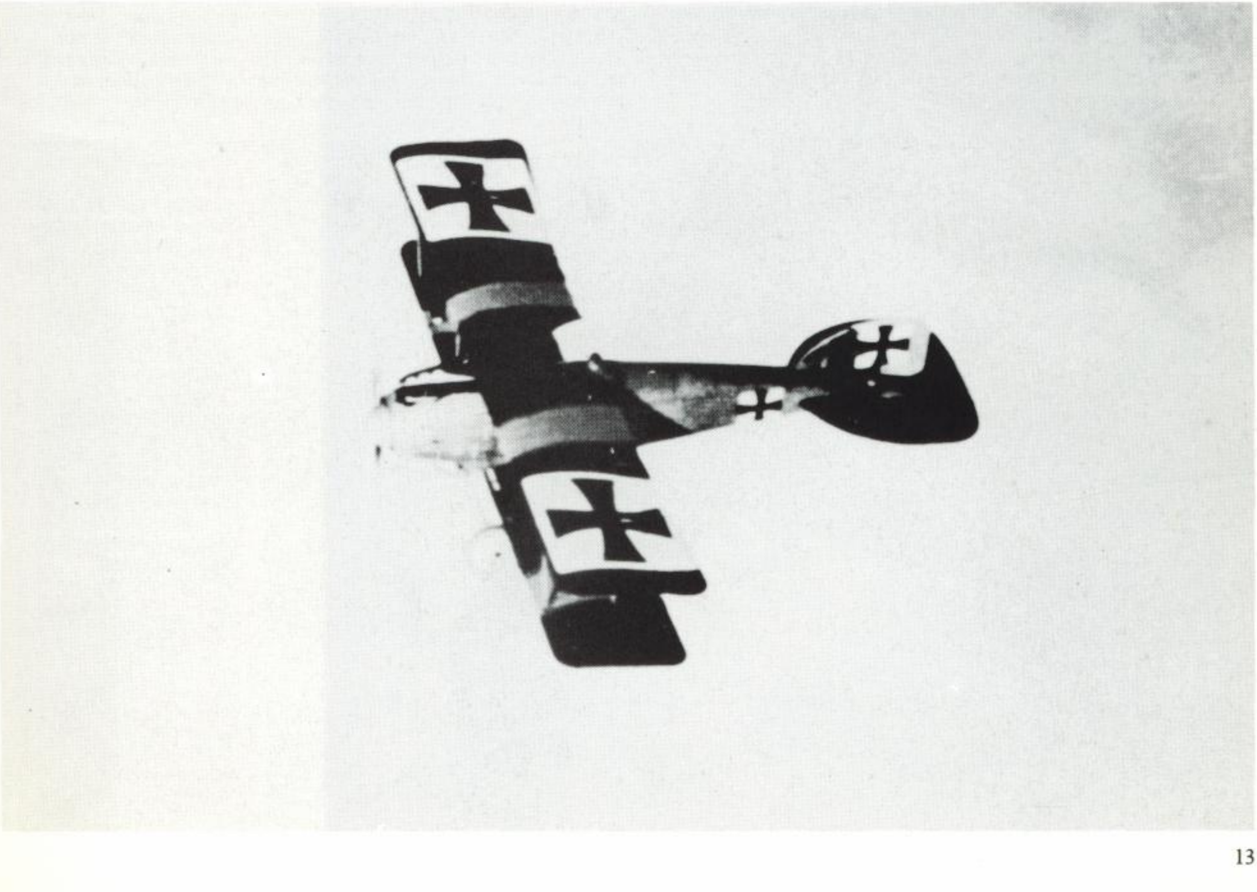

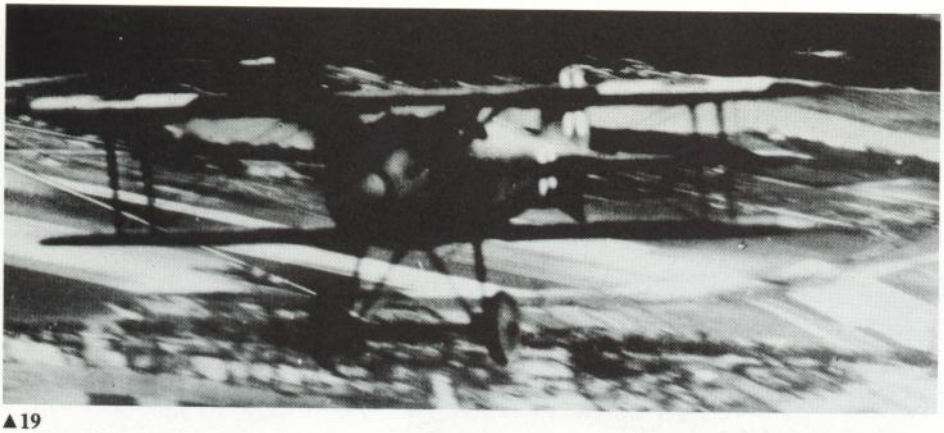

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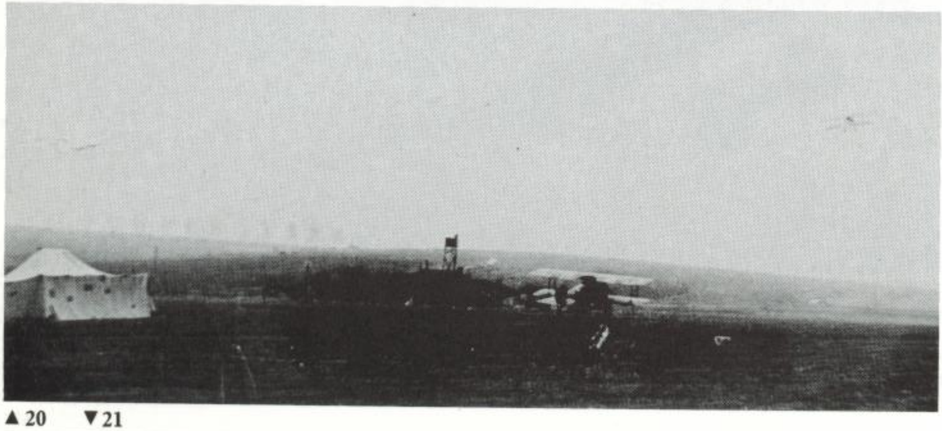

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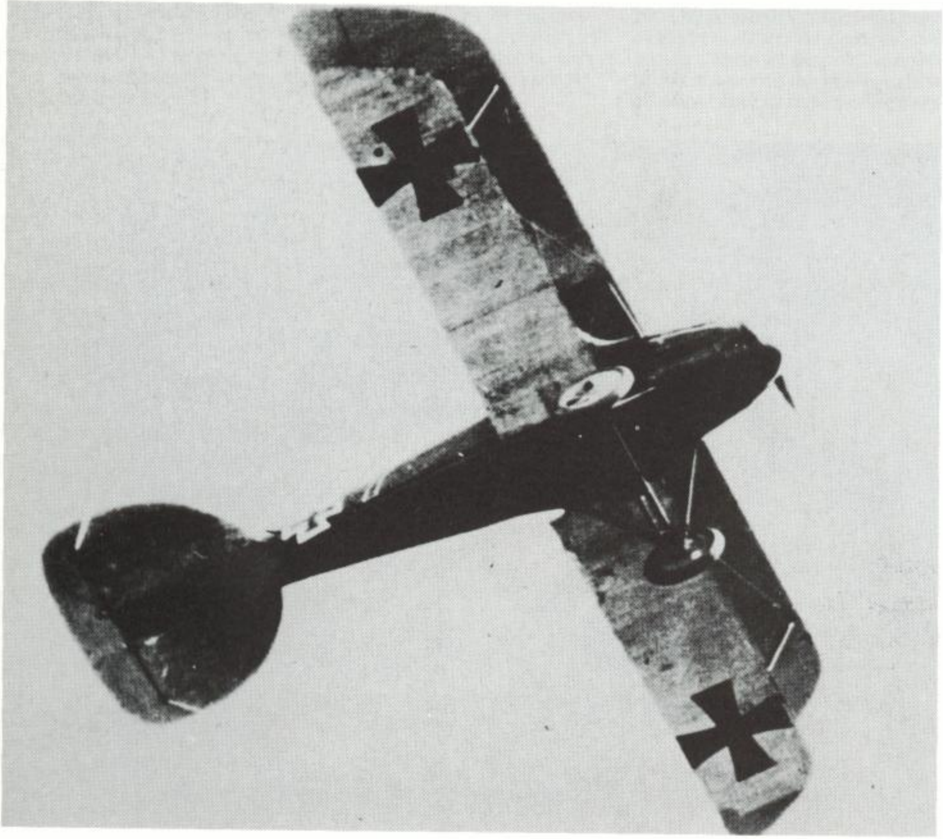


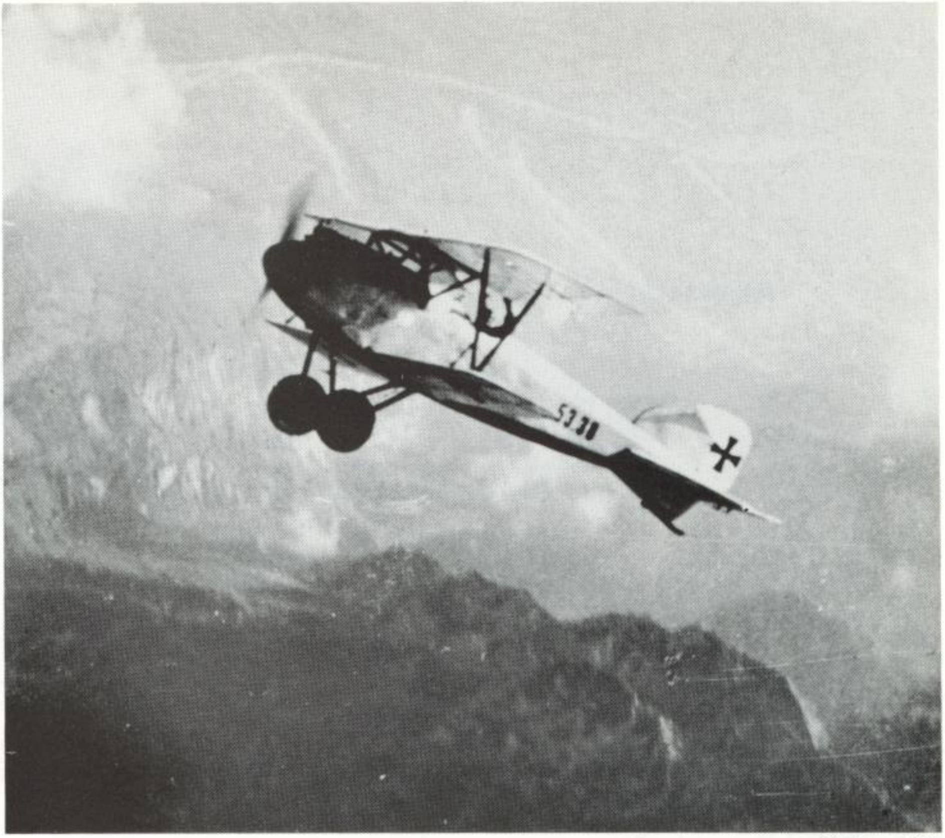
19. This Albatros DII belonged to *Jasta 30*. The photograph emphasizes how the wing cellule of the earlier DI was redesigned by reducing the gap and bringing the upper wing closer to the fuselage. Later the DII was further cleaned up by having the fuselage-mounted box radiators replaced with a flush-fitting version installed in the upper wing centre-section.

20. A flight of Albatros DII fighters becomes airborne in this evocative scene. On the original print at least three aeroplanes are aloft, indicated by numbers. The machine in the foreground bears narrow white stripes on its upper wings and rear fuselage.

21. The Albatros DIII was the fighter most commonly encountered by Allied airmen during 1917. Developed from the DII, it adopted the 'sesquiplane' wing layout of the French Nieuport designs and was quickly dubbed 'Vee-Strutter' by its adversaries. Note the plain crosses below the wings.

22. The Albatros DIII was also in widespread service with Austria-Hungary, many being built by Oeffag. This photograph has a remarkable history and was taken by the observer of a two-seater crew from *Flik 24* on 18 August 1917. Josef Friedrich was flying as escort in Oef 53-38 when an Italian SPAD attacked the two-seater. Friedrich shot down the SPAD after a lengthy duel and returned waving his fist in victory!

23. An OAW-built Albatros DIII of *Marinefeldjasta 2.* The printed-fabric (lozenge) covered flying surfaces are clearly seen, as are the prominent rib tapes cut from the same material. Note the Teves und Braun flush-mounted upper wing radiator on the centre-section.



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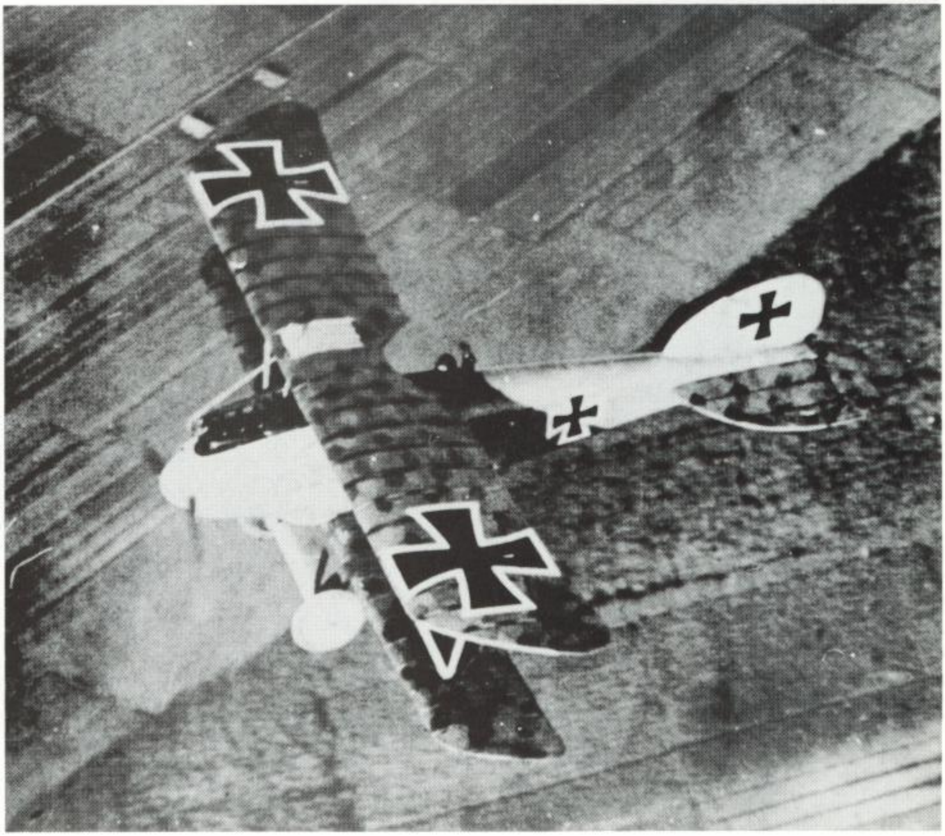

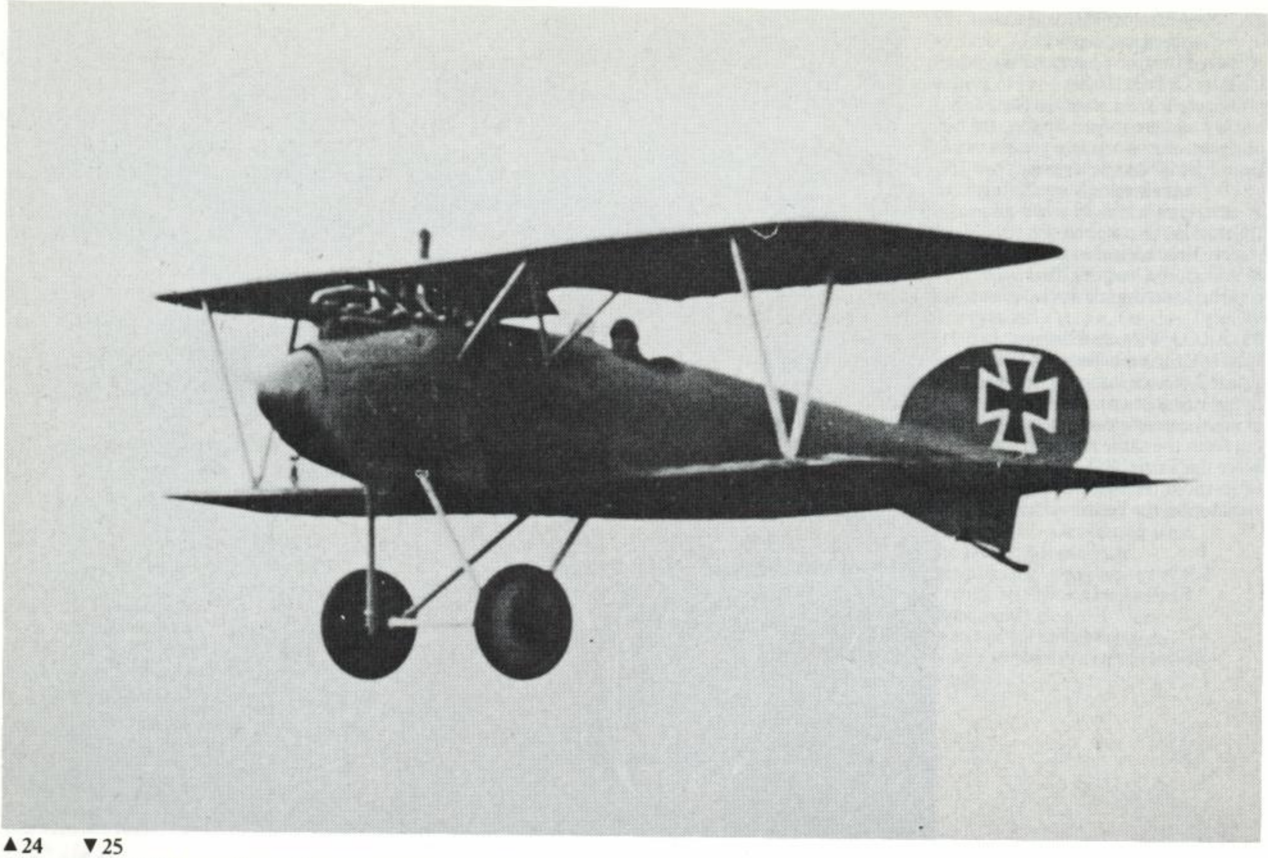

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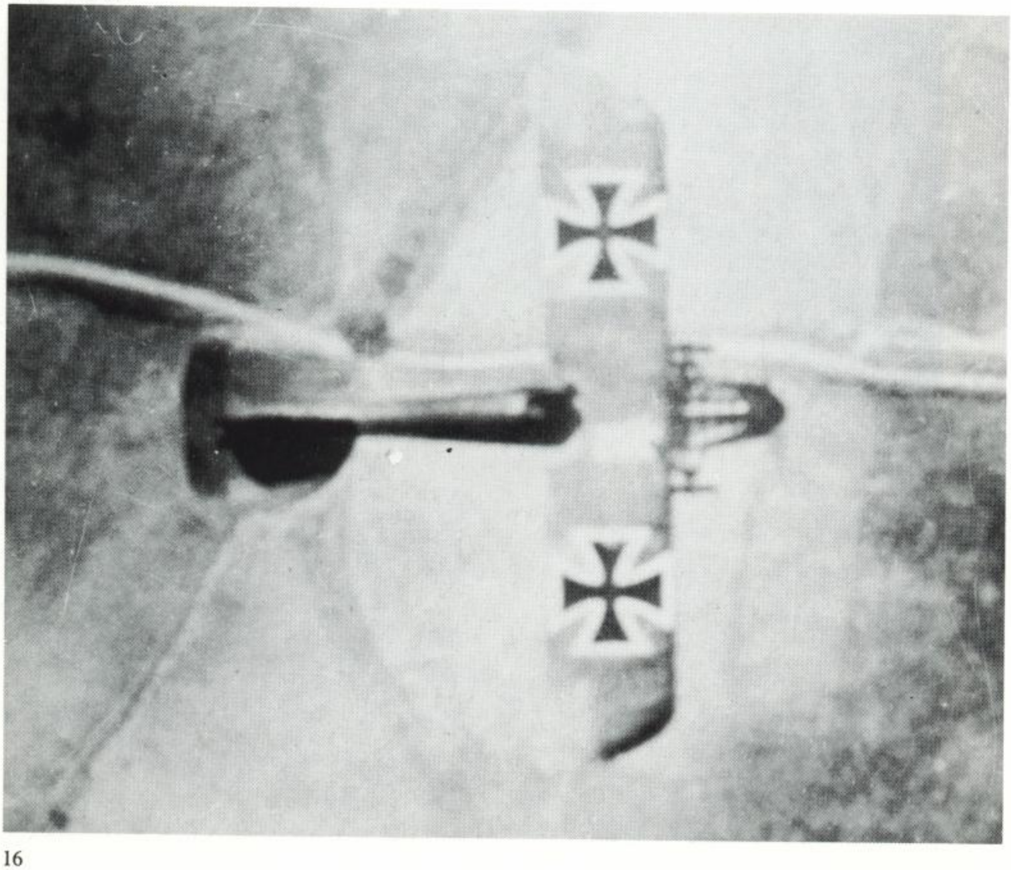
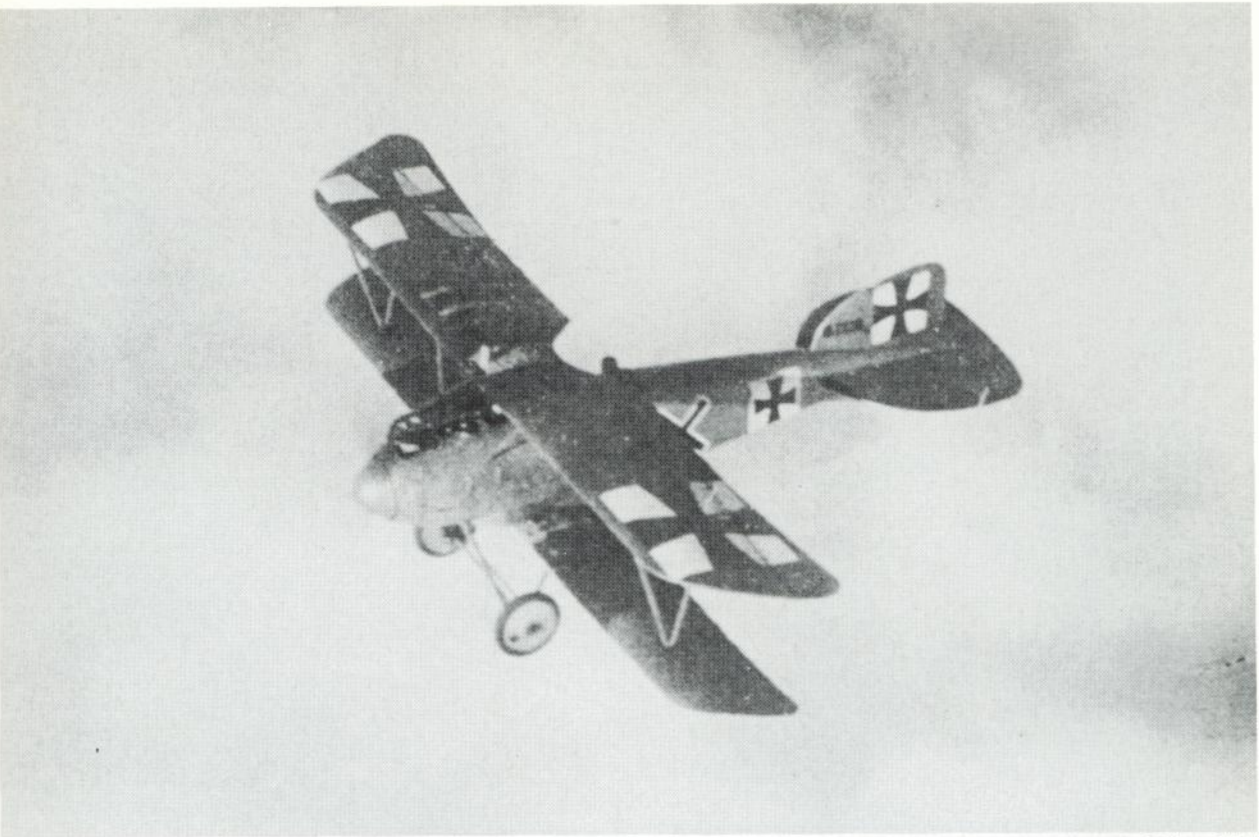
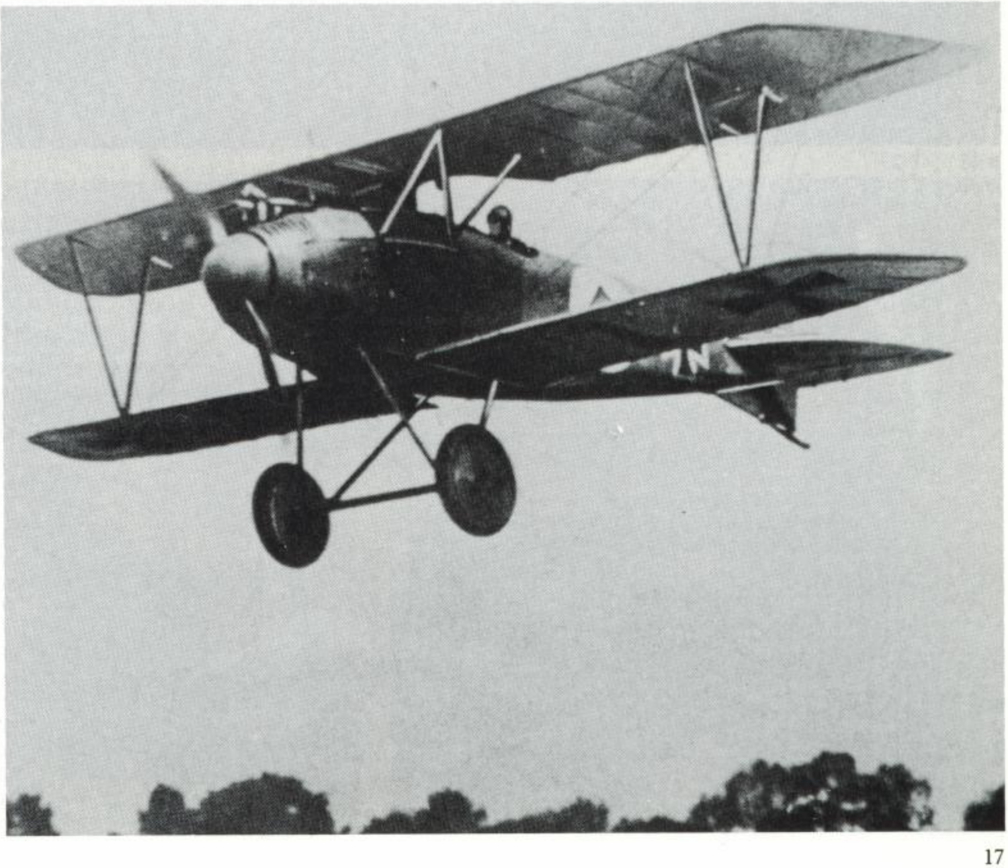


24. Another OAW-built Albatros DIII, distinguishable by its rudder of greater area and rounded profile. The machine is unarmed and may have been used as a training aeroplane or for communications duties. Note the light-coloured struts, which were probably doped in the pale blue of the undersurfaces.
25. An unusual portrait of a DIII flown by *Leutnant* Rudolph von Eschwege in Macedonia. The position of the upper wing national insignia is of interest, and the break in the wing camouflage demarcation lines leads one to suspect that replacement ailerons have been fitted.





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26. An Albatros DIII marked with a white-outlined black 'X' on its fuselage sides, doubtless an early production machine by virtue of the national insignia having been placed on large white fields. Note also how the upper wing insignia extend almost to the extremities of the wing tips. (Courtesy A.E. Ferko)

27. Regrettably, details of this colourfully striped and decorated DIII are lacking; note the fuselage markings and the numerals below the lower wings. The DIII was built in large numbers and operated in many front-line units, becoming the favourite mount of many of Germany's leading air aces. The DV superseded the DIII during late 1917.

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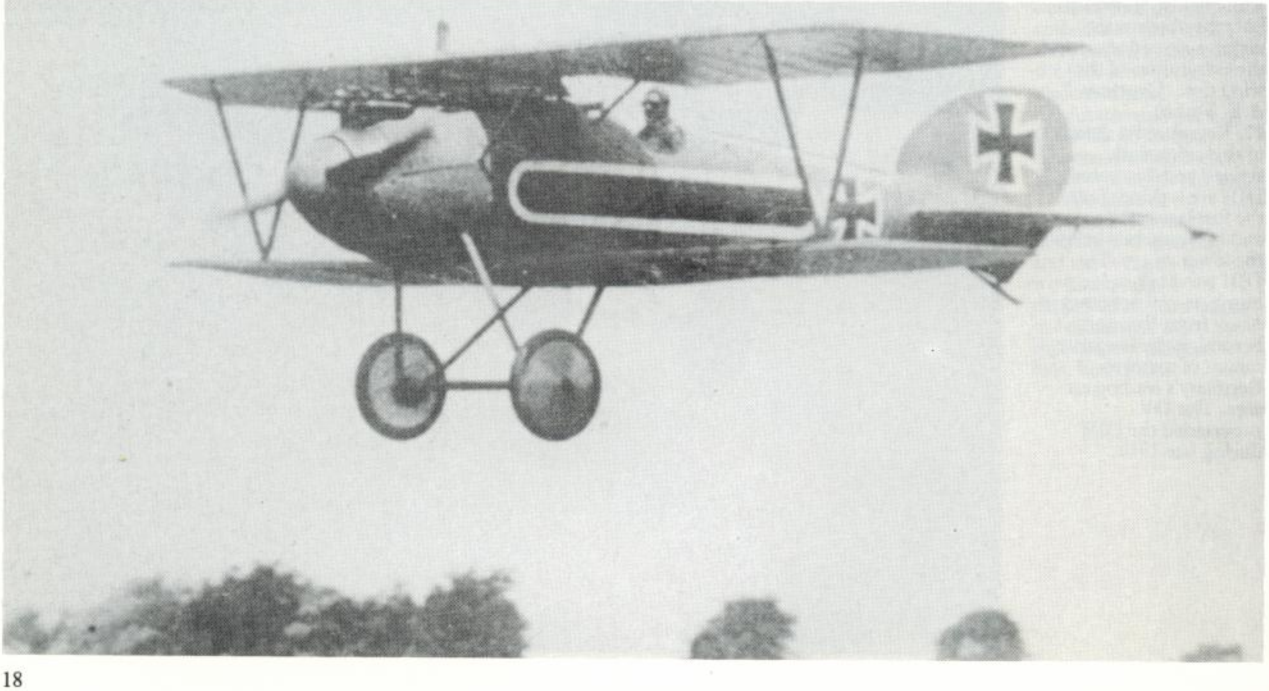

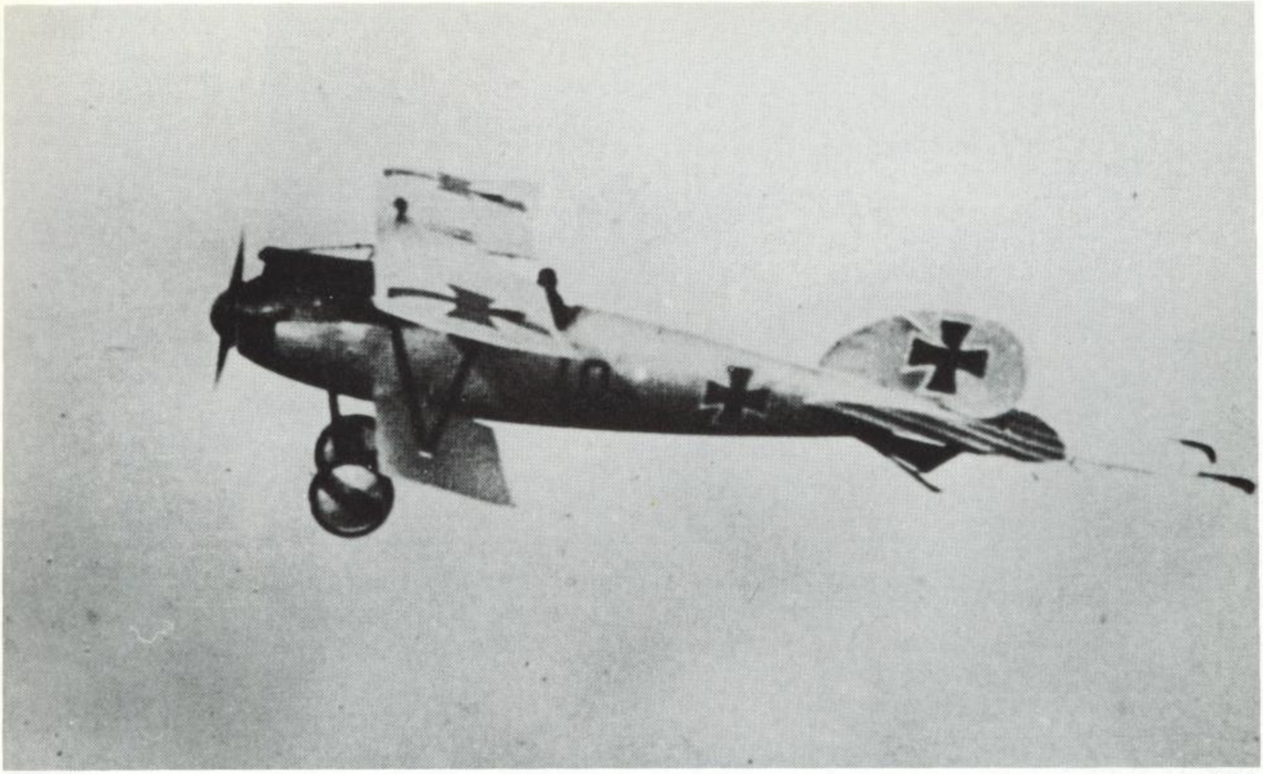

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28. An OAW-build Albatros DIII, believed to be of *Jasta 57*, with a deep red and pale blue painted fuselage. The late-style markings are shown to advantage, as are the prominent pale blue wing rib tapes over the 'lozenge' fabric-covered flying surfaces.

29. Although the Albatros DV/DVa featured a totally redesigned and more streamlined fuselage, the new types offered no significant advantages over their predecessor. This particular machine was flown by *Leutnant* Schlomer of *Jasta 5* and featured a prominent black and white fuselage marking.

30. *Leutnant* Ernst Udet of *Jasta 37* in one of his Albatros DVs. In common with most of the aeroplanes flown by Udet, the fuselage bears the name 'Lo', referring to Lola Zink, the pilot's fiancée. Note the striped wheel covers and the tailplane in grey and white, the unit colours.

31,32. A fascinating pair of photographs taken aboard an Aviatik CI of *Fl.Abt.39* during a sortie over the Western Front in 1916; *Leutnant* Schwarge is the pilot, snapped by his observer from the front cockpit. Note the substantial windscreen and the rear view mirror mounted to the port centre-section strut.

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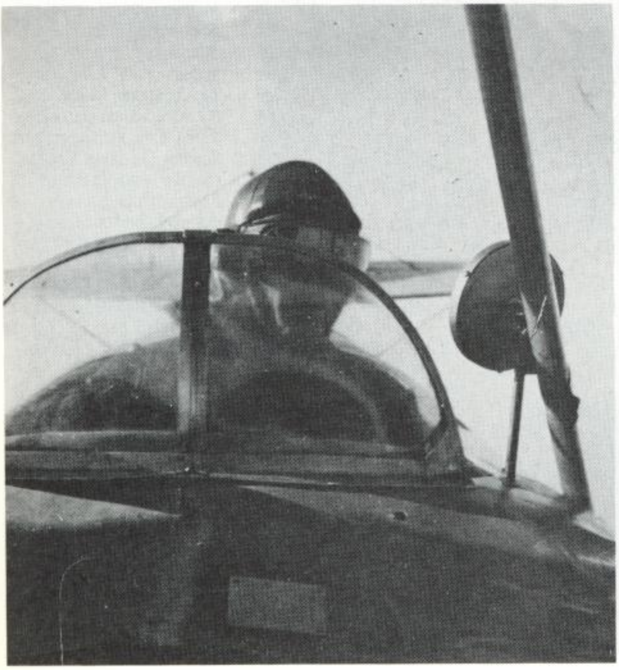

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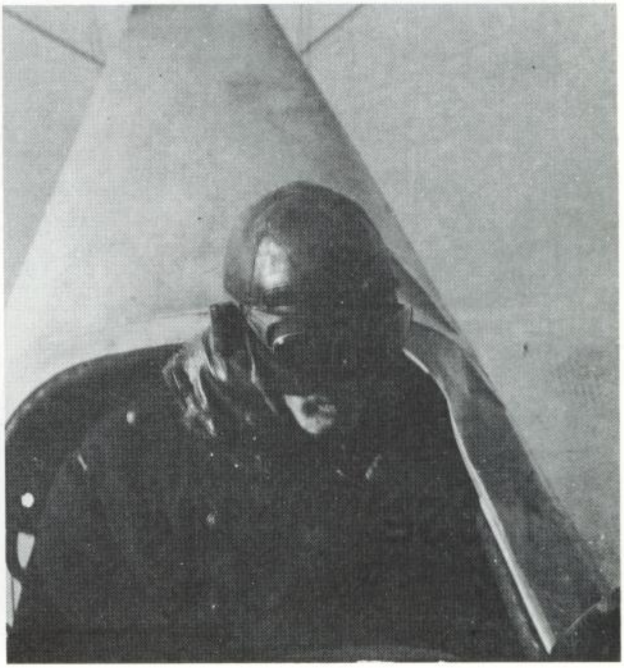

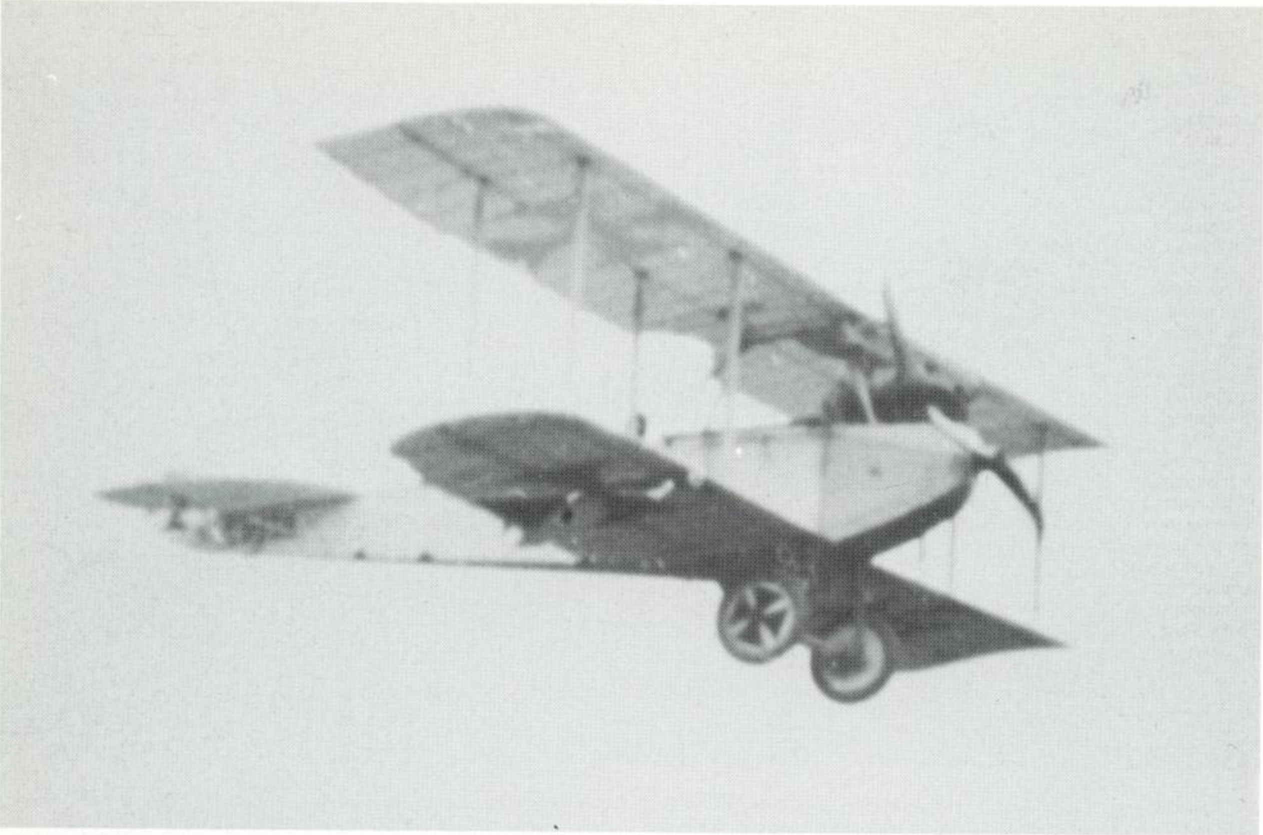

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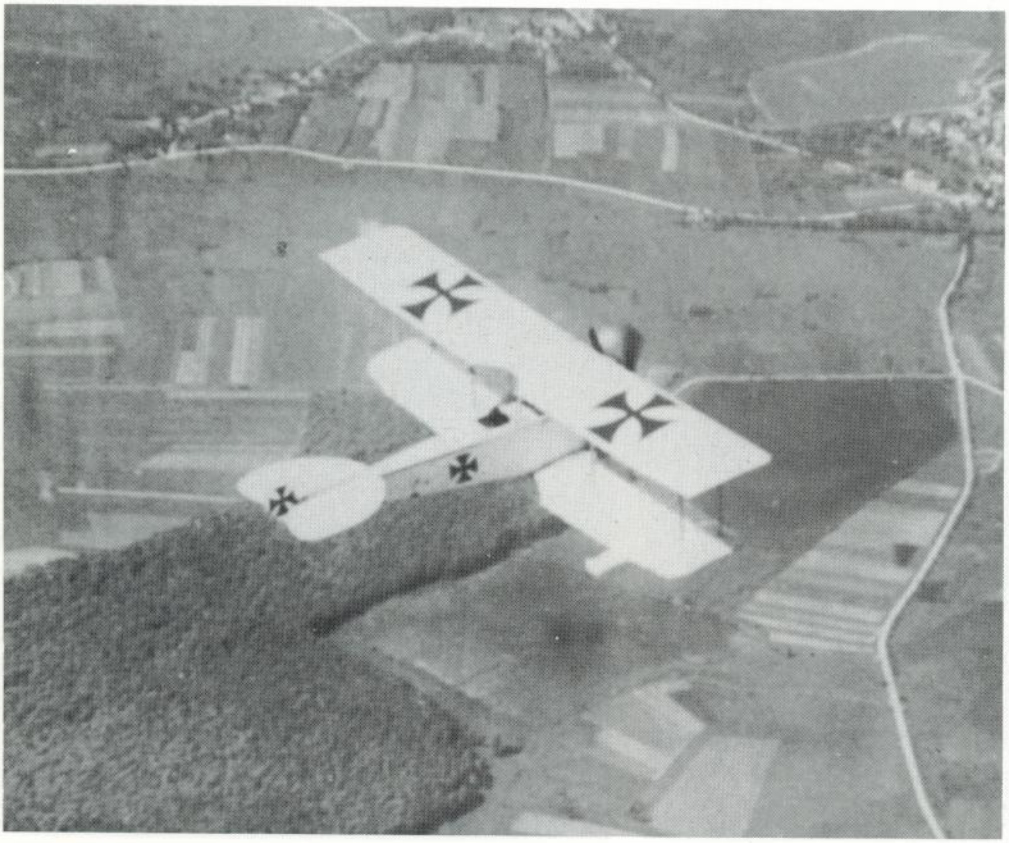
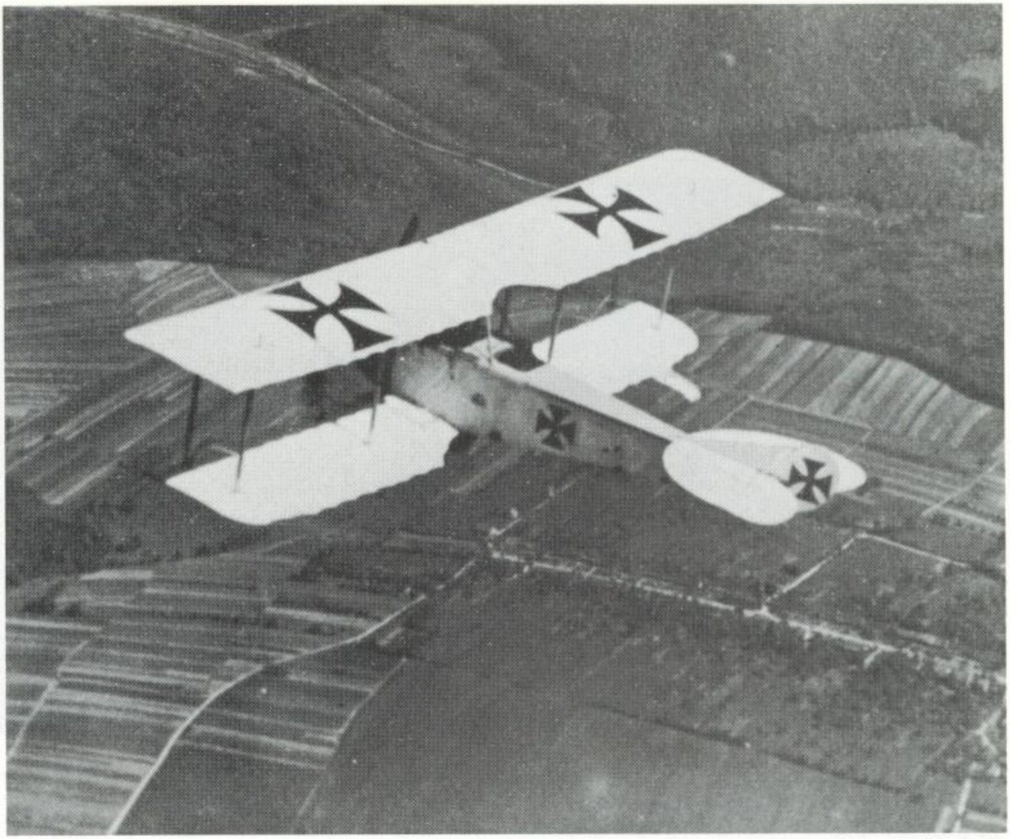


33. An Aviatik CI in its element. The CI was the first Aviatik type to enjoy anything like large-scale production and came into service during early 1915. It was powered by the 160hp Mercedes DIII engine and armed with a machine gun for the observer.

34. A 'snow white' Aviatik CI on patrol. The CI was unique among German C-type tractor aeroplanes in having the observer occupy the front seat, which made operating the defensive machine gun extremely difficult. The crew positions were later reversed, to take up the traditional layout.

35. Aviatiks were operated by *Fl.Abt.* units for reconnaissance and often used in flights of up to six machines as armed escort to unarmed reconnaissance aeroplanes. The type was blessed with a complex fuel system comprising four separate tanks and a complicated series of cocks and pipes allowing the engine to run on any one tank.
36. The Beardmore WB.III was essentially an extensively modified Sopwith Pup designed for shipboard use, complete with folding wings and, initially, a jettisonable undercarriage. The type, despite its being based on the superlative Pup design, was not a great success and trials were disappointing. (J.M. Bruce/G.S. Leslie Collection)



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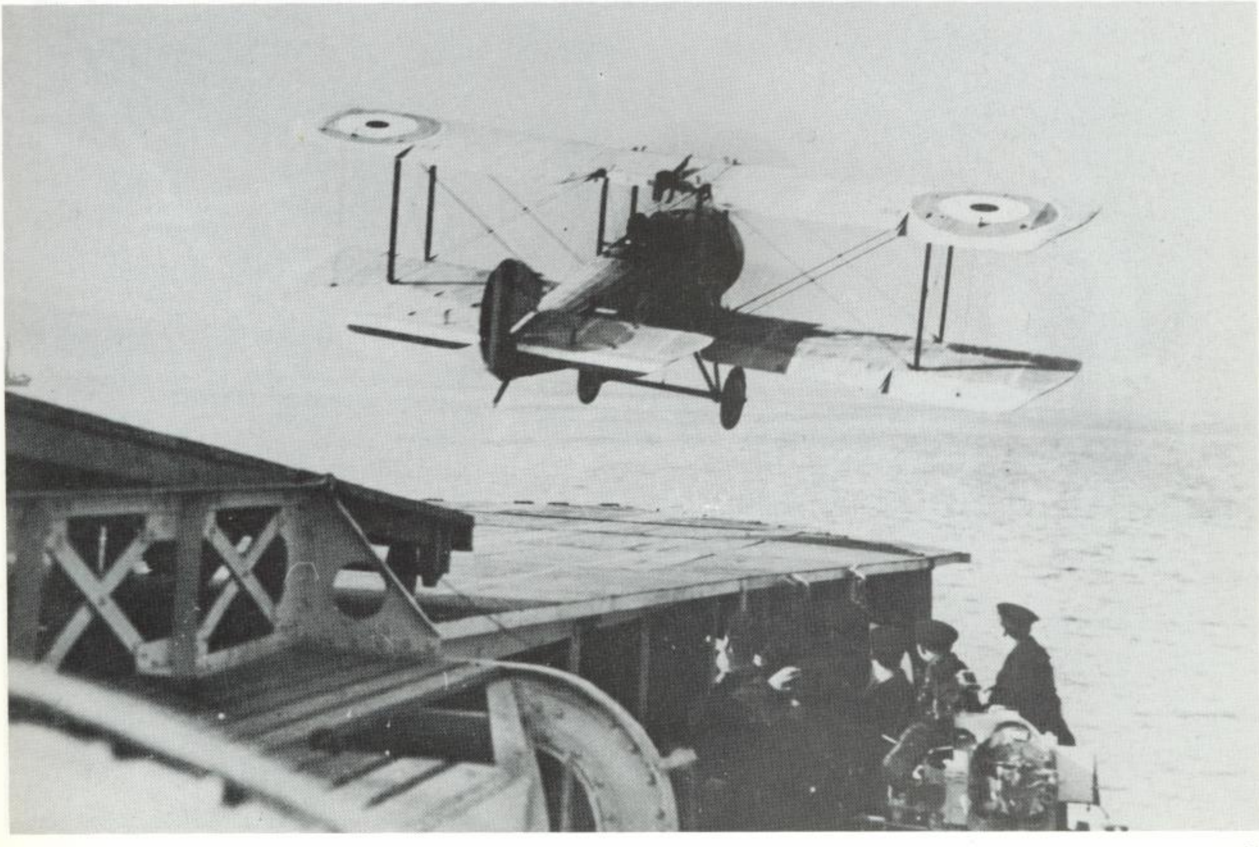

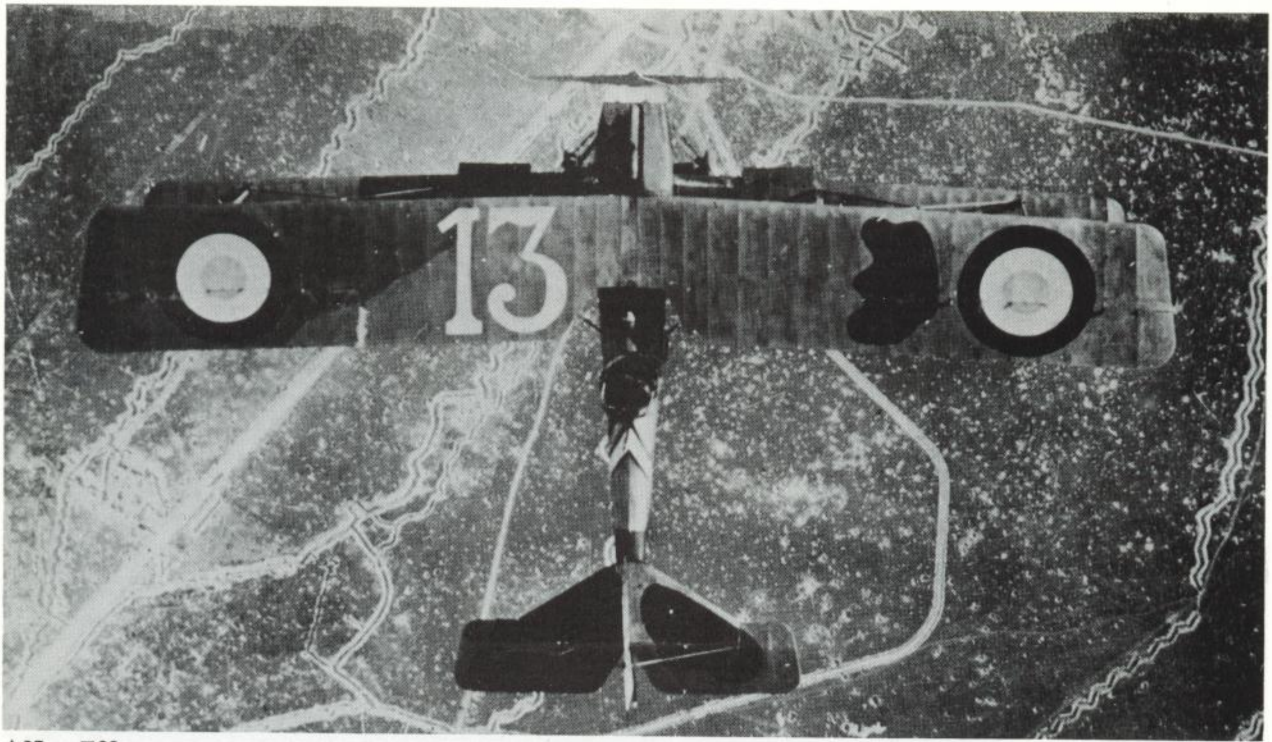

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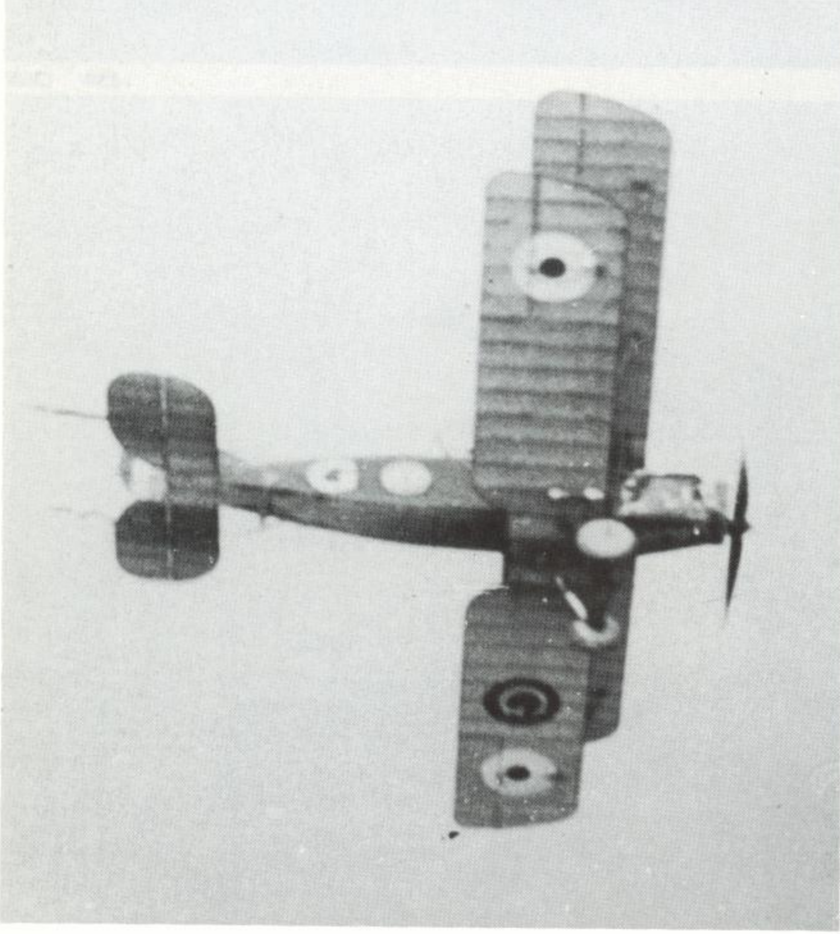
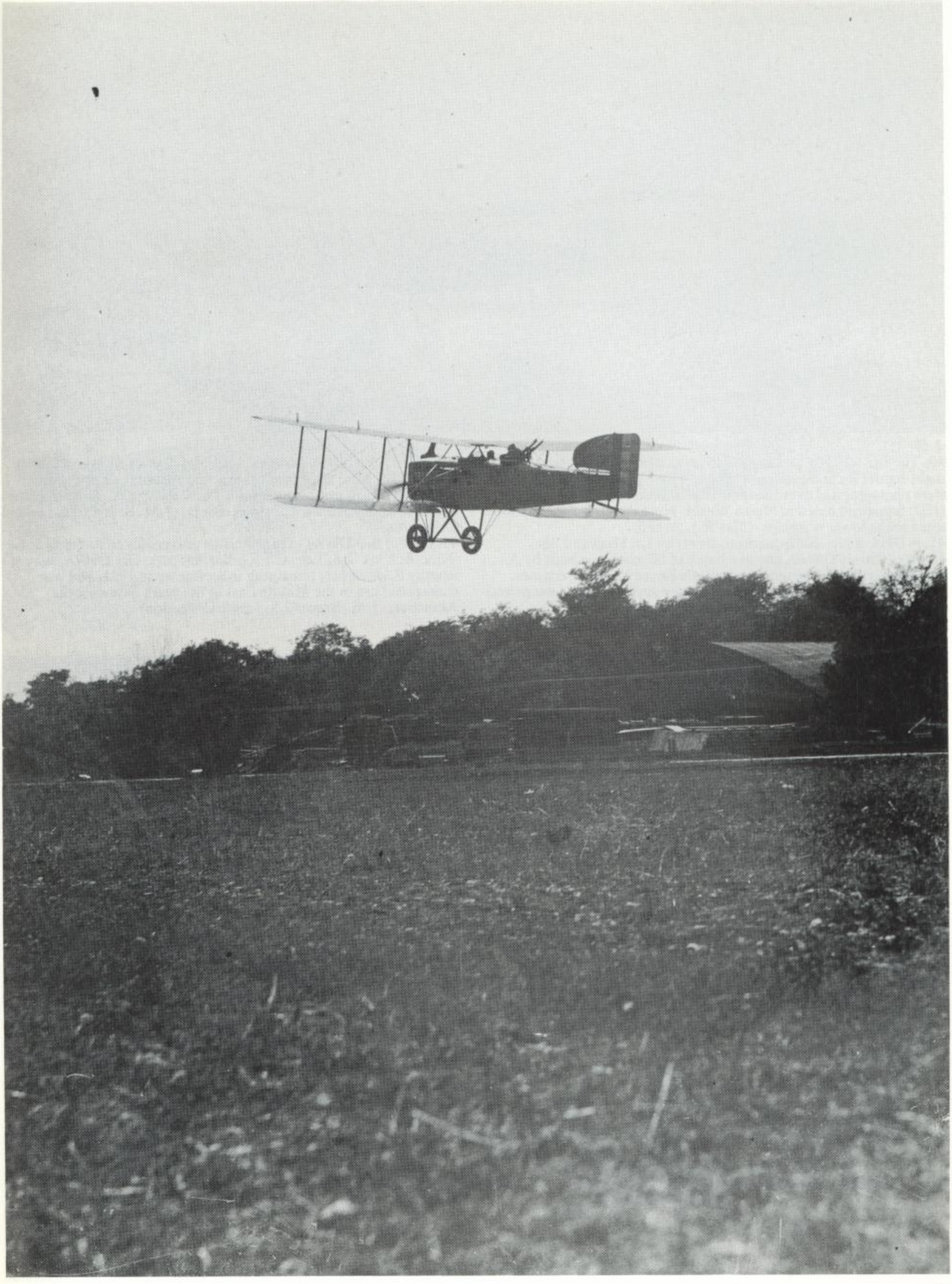
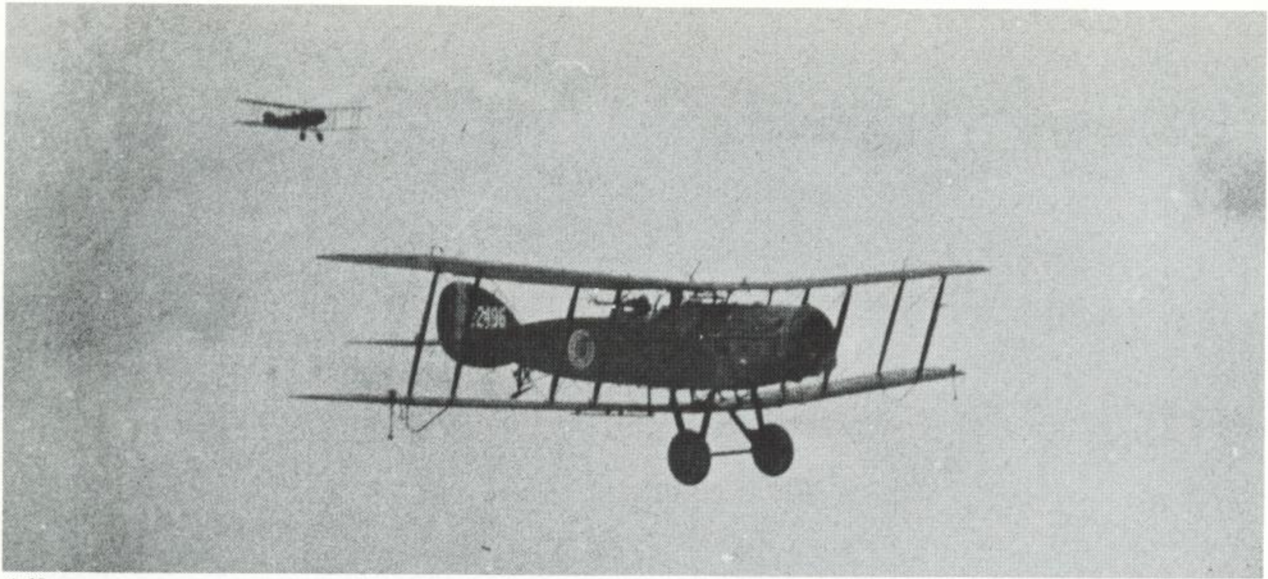


37. The best French-designed two-seater reconnaissance machine of the war was the Breguet 14. Illustrated is a 14B2 of *Escadrille 13* – note the bomb rack fairings protruding from the lower wing leading edges. The French five-colour 'patch' camouflage may be noted. (Musée de l'Air)

38. The superlative Bristol F2B Fighter, a machine which proved to be a deadly opponent of the German *Jagdstaffeln.* This particular example is 'G' of No. 22 Squadron Royal Air Force based at Vert Galand in 1918. Note the Flight Commanders' pennants attached to the elevators. (RAF Museum)

39. A Breguet 14 in AEF service takes off from a front-line aerodrome in 1918. This highly successful reconnaissance and bombing machine saw extensive service with American, French and Belgian units and soldiered on in various forms long after the Armistice – indeed, production did not cease until 1926, by which time over 8,000 had been constructed.





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40. The Bristol Fighter was used to good effect as a UK-based night-fighter on home defence duties. These particular aeroplanes were photographed over Essex in 1918 and belonged to No. 39 (HD) Squadron based at North Weald. Note the Holt flare brackets fitted to the lower wing tips. (Mrs A.J. Arkell)

41. A DH4 of No. 202 Squadron, flown by Lt. Hurt and Sgt. Hooper. This is D8420, one of a batch of 80 machines built by Airco and fitted with, for the most part, Rolls Royce Eagle IV engines. Note the prominent rib tapes on the lower surfaces of the wings and tailplane. (J.M. Bruce/G.S. Leslie Collection)

42. The standard Eagle VII installation in F5706, a No. 202 Squadron Airco DH4 built by Palladium Autocars Ltd. of Putney in late 1918. Note the extensive exposed area of the upper wing centre-section to improve the pilot's upward vision. The aeroplane bears red and white halved wheel covers. (J.M. Bruce/G.S. Leslie Collection)

43. Pilot of this DH9A (a type known universally to its crews as the 'Nine-Ack') is Sqn. Ldr. C.P.O. Bartlett DFC. The DH9A enjoyed a lengthy RAF career, remaining in service up to 1931, and saw widespread use in the Middle East in the years following the Armistice. (J.M. Bruce/G.S. Leslie Collection)

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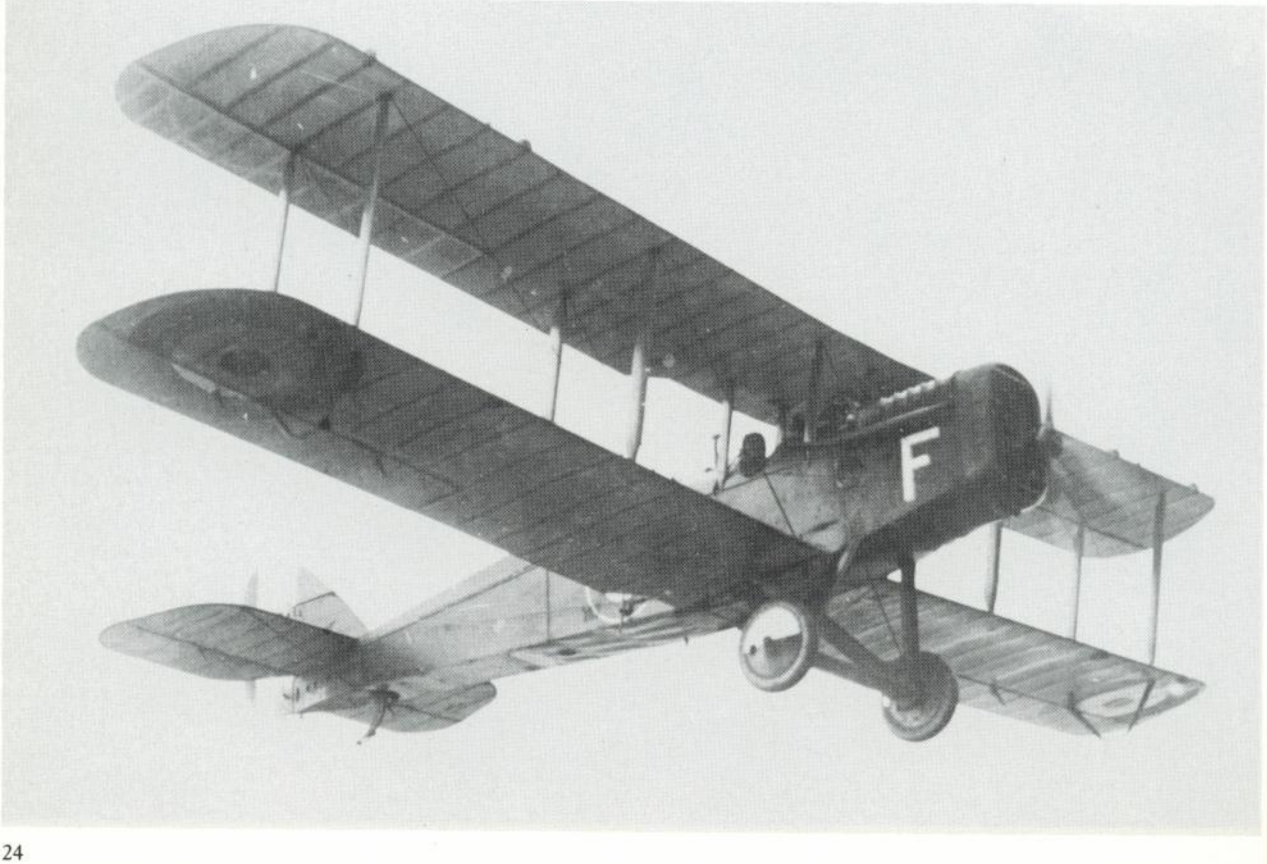

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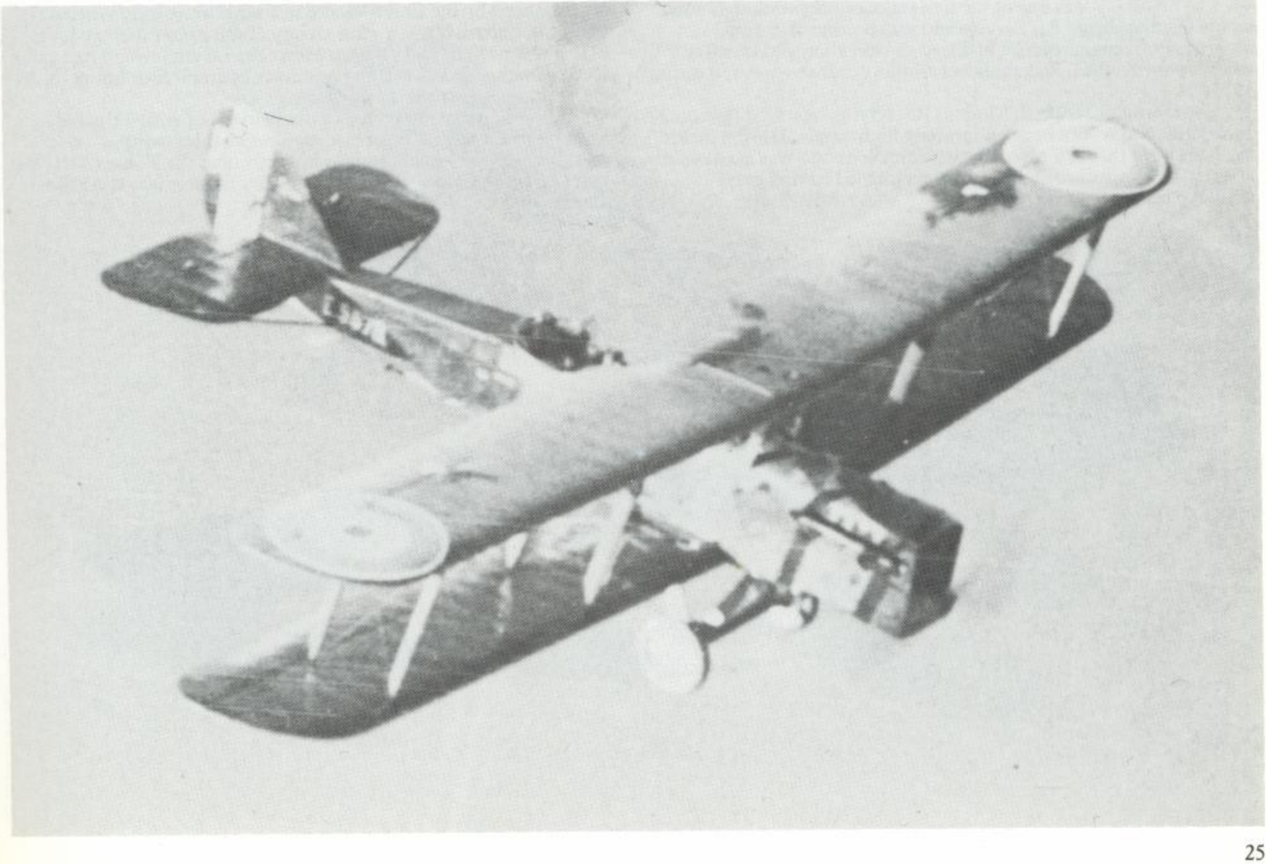

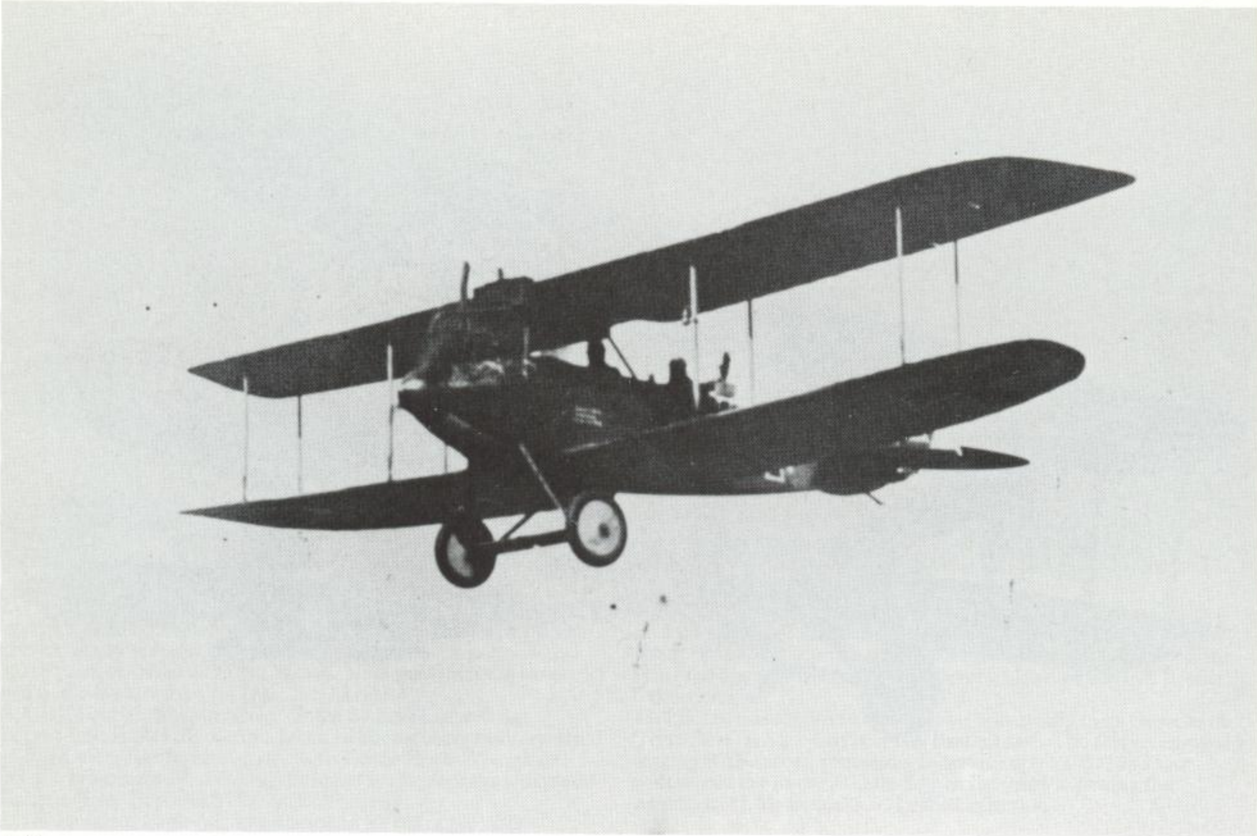

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44. The DFW CV was one of the most successful two-seaters used by the German Army Air Service and was produced in large numbers for reconnaissance, artillery co-operation and infantry contact patrol duties. Several licence-built versions appeared during 1917.

45. The Dornier (Zeppelin Lindau) RSII flying boat first flew on 30 June 1918, and is seen here undergoing flight trials. During its life the RSII went through extensive modifications and was used mainly as a test-bed for future designs, lessons learned having great influence on later Dornier designs.

46. Produced by the Euler-Werke in Frankfurt towards the end of 1914, the Euler BII was a virtual copy of the contemporary LVG BII. It was powered by a 100hp Mercedes DI engine and had a top speed of some 75mph and an endurance of about four hours. Note the prominent radiator on the fuselage side.

47. Spurred on by the success of the British Sopwith Triplane, many German manufacturers turned to the three-wing configuration for fighter designs but only one, the Fokker DrI, was to see quantity production. Among many failures was the Euler 'DrIII', of which few details are available.

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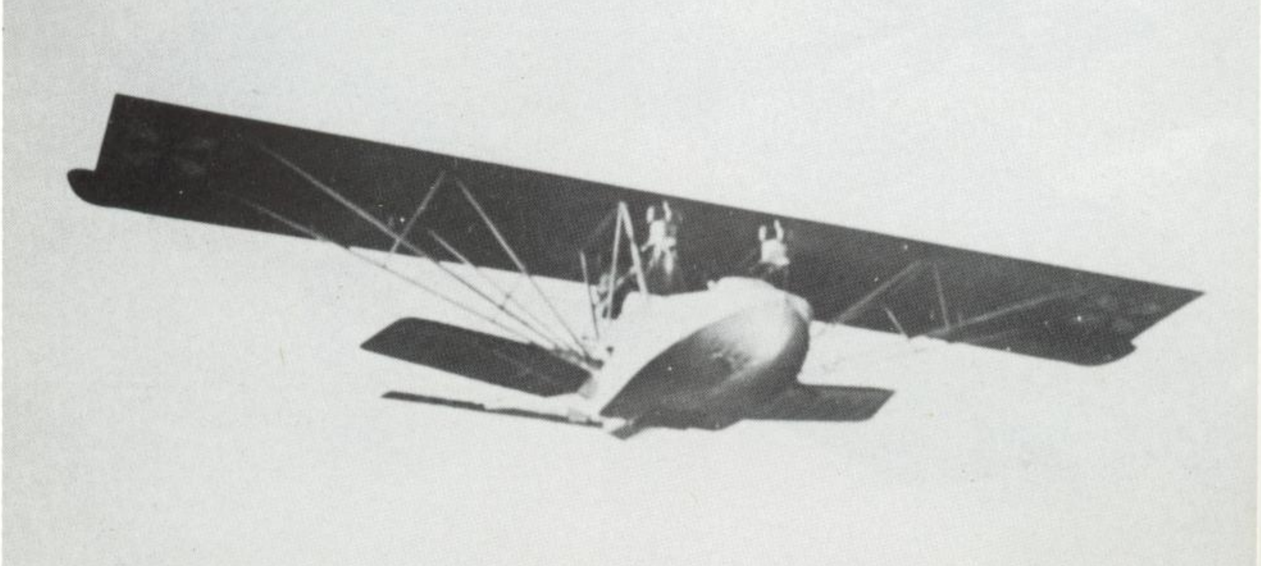

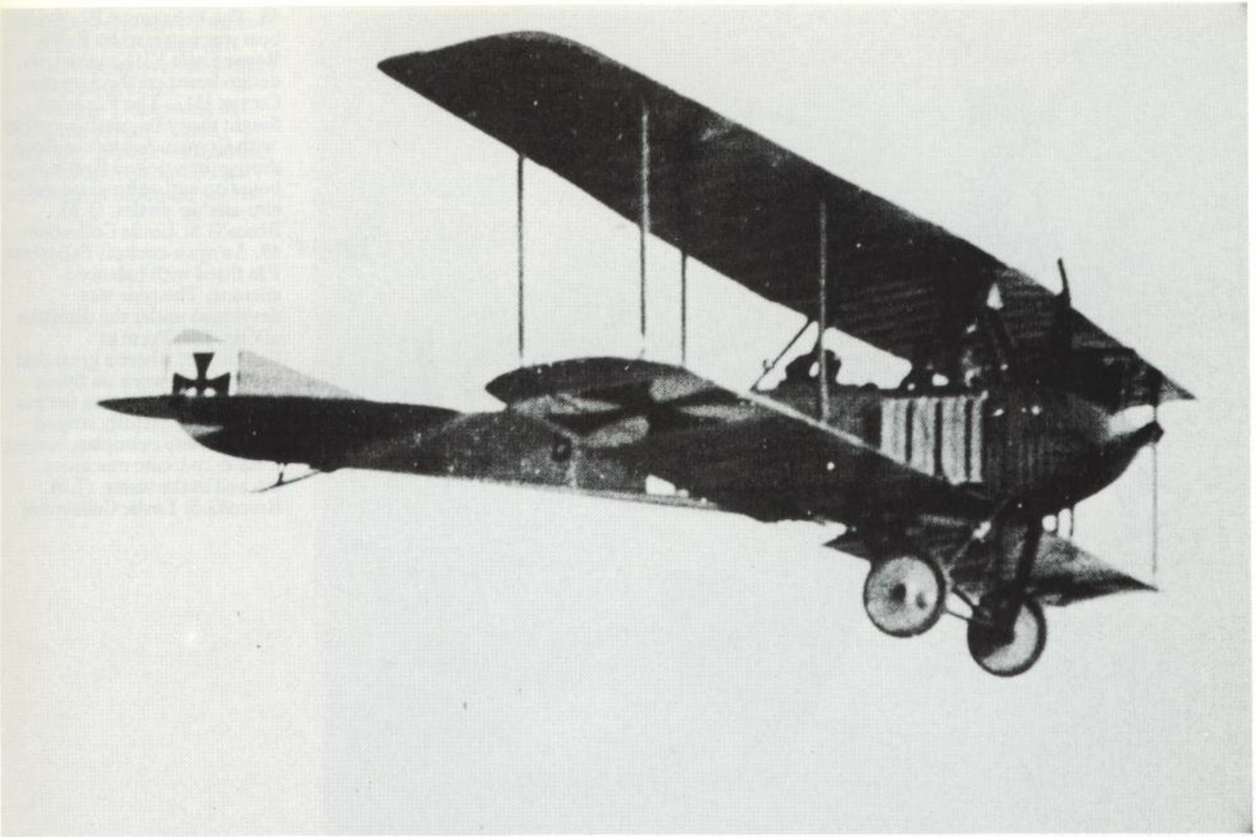

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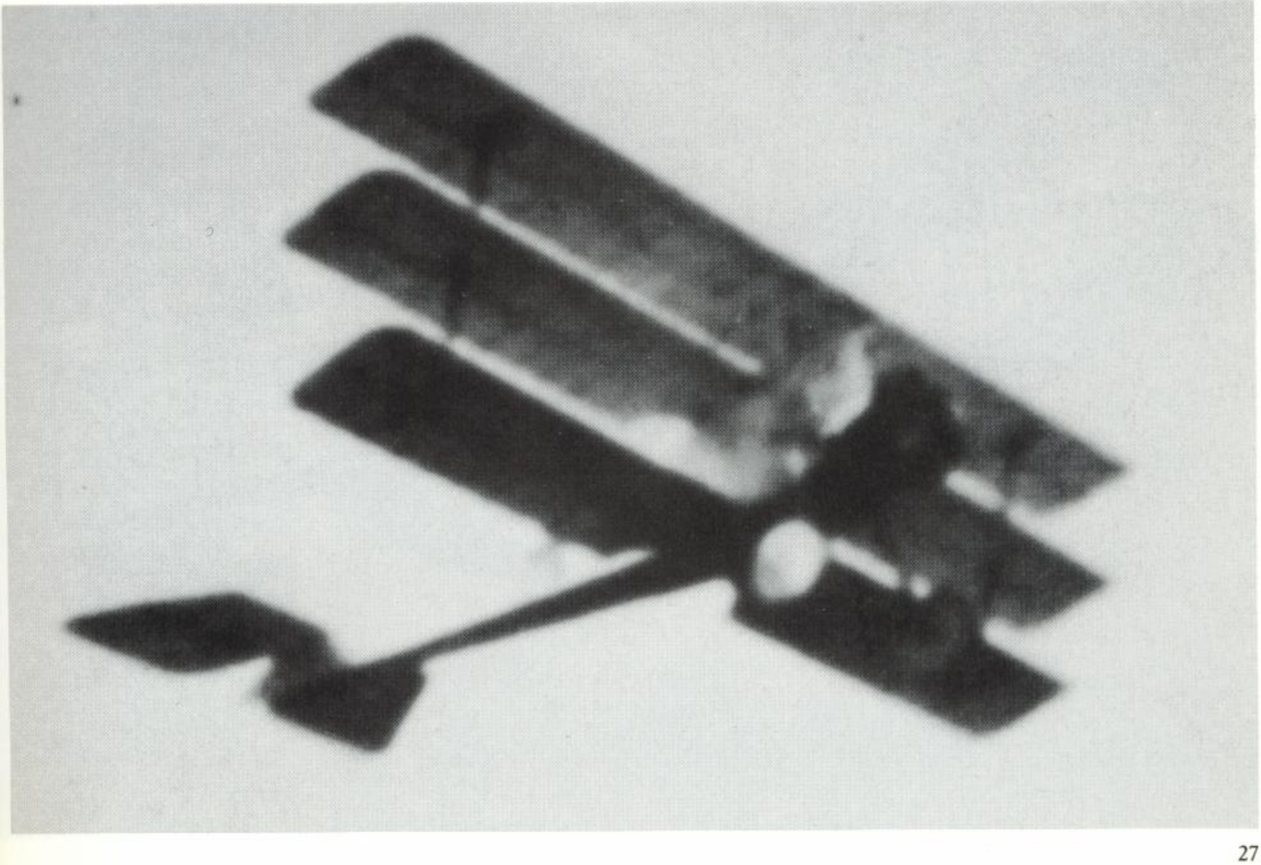

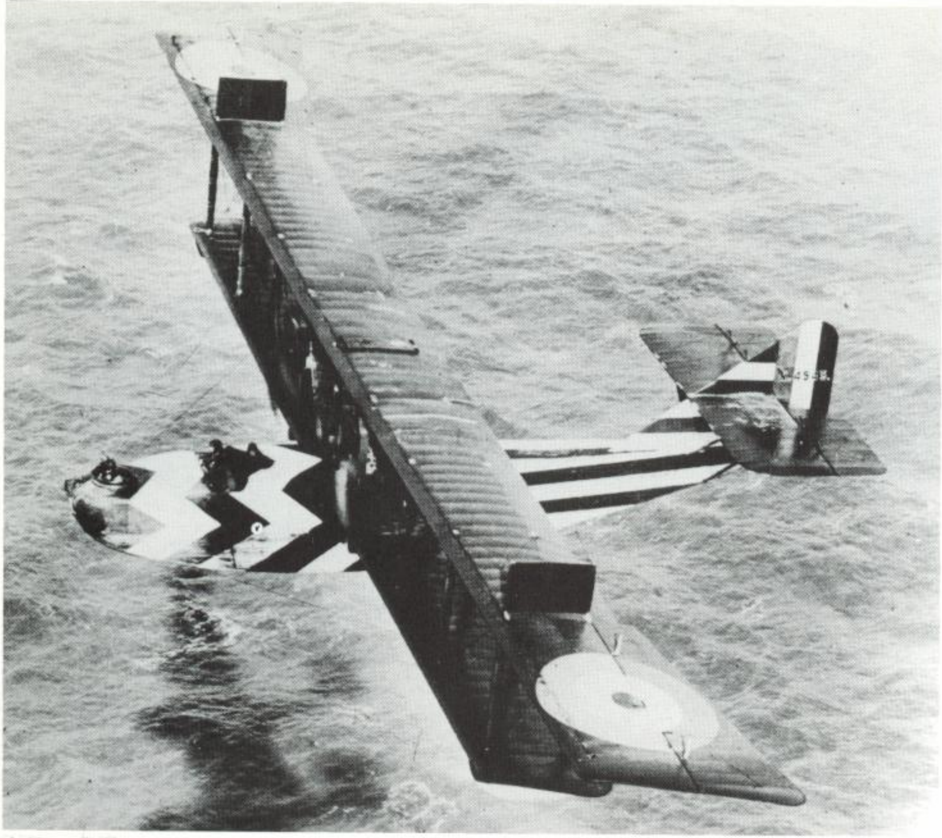

48. The Felixstowe F2a flying boat was powered by Rolls-Royce Eagle VIII engines, its design based on the American Curtiss H12. The F2a boats fought many successful combats with German fighter seaplanes during the war and flew long hours on anti-submarine and anti-airship sorties. (J.M. Bruce/G.S. Leslie Collection)

49. An open-cockpit Felixstowe F2a fitted with balanced ailerons. The type was developed under the direction of Cdr. J.C. Porte at Felixstowe, where a great deal of important work on flying boats was done during the war. Note the colourfully striped hulls of these examples, making it easier to locate machines ditched in the water. (J.M. Bruce/G.S. Leslie Collection)

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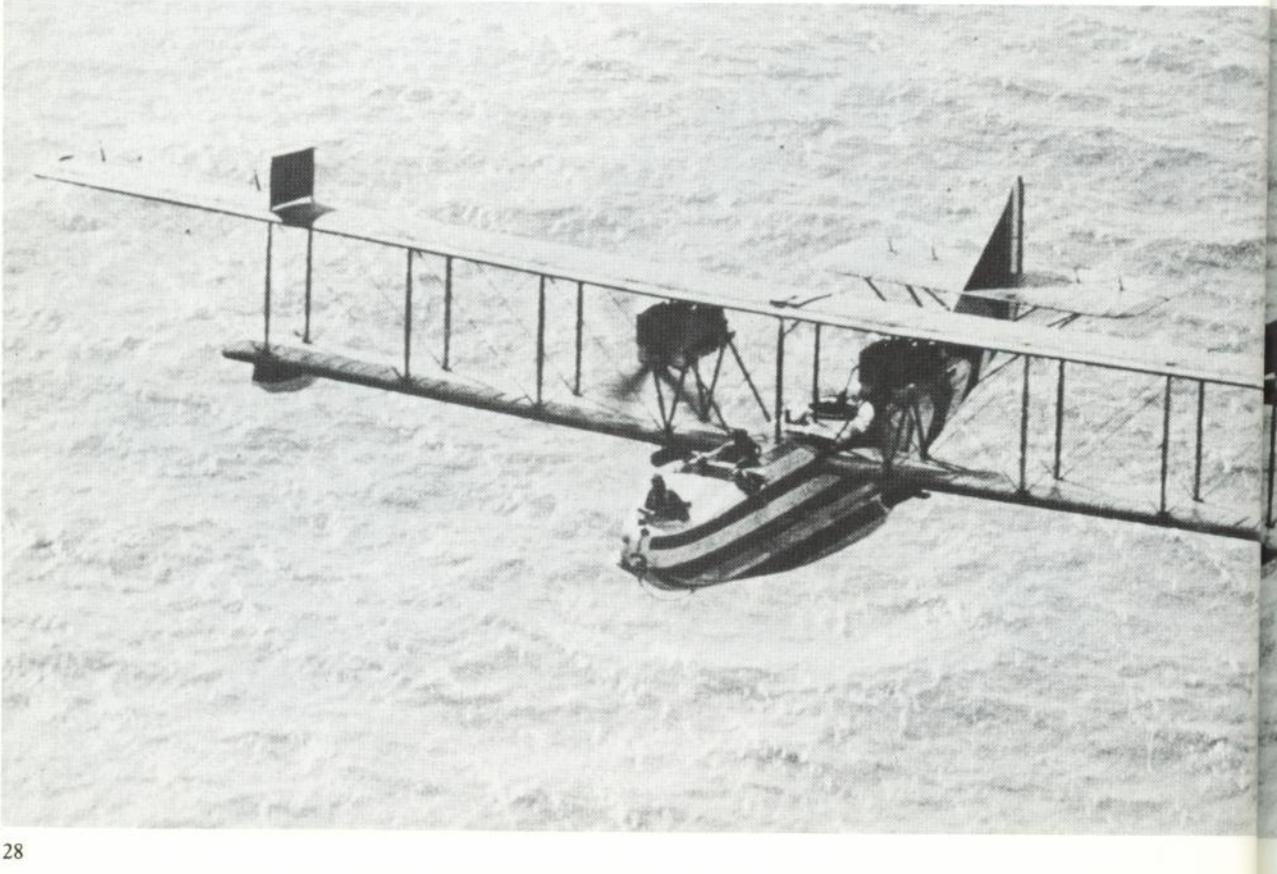
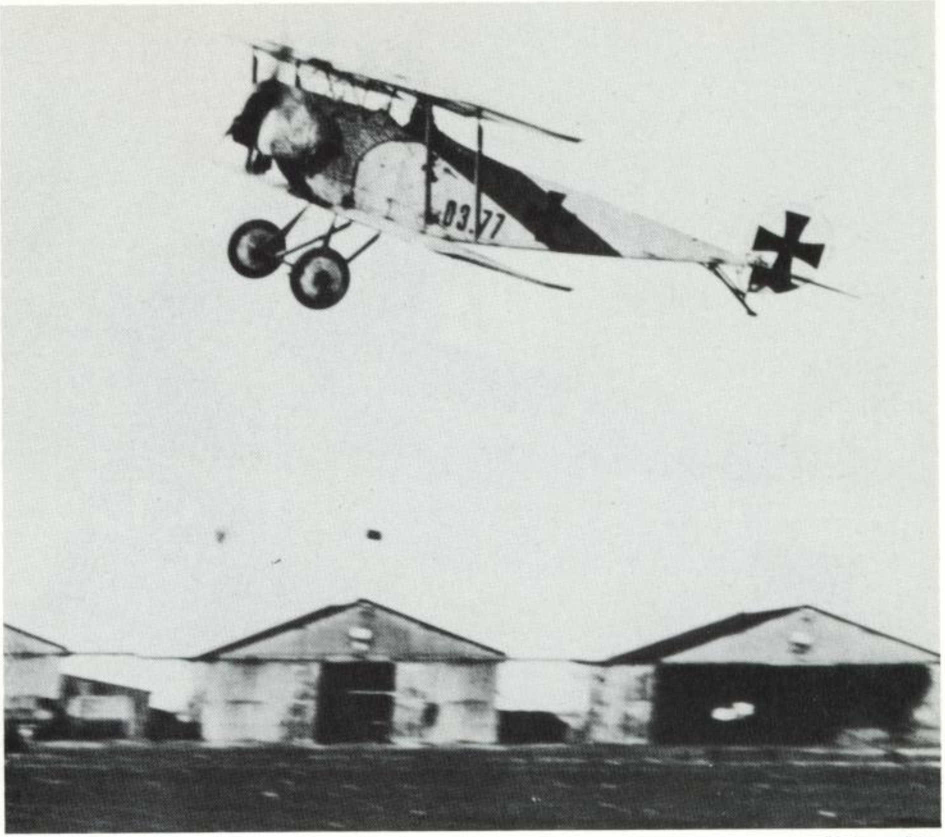


50,51. Two evocative studies of Austrian-built Fokker BIII 03.77 cavorting over its airfield for the benefit of the cameraman. Designated M17 E/2 by the parent Fokker company, those few machines that went to Austria-Hungary were used as unarmed scouts.



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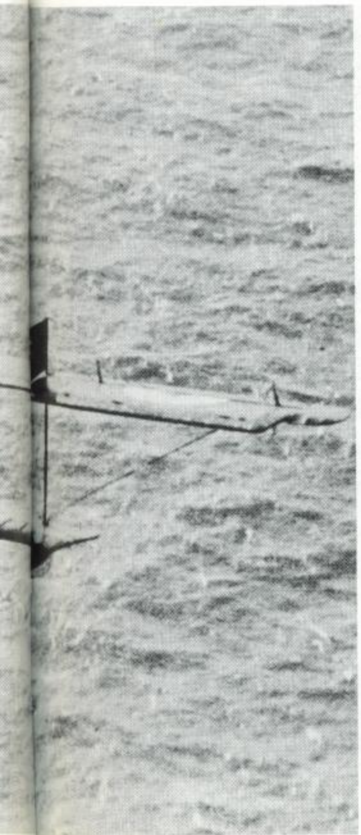

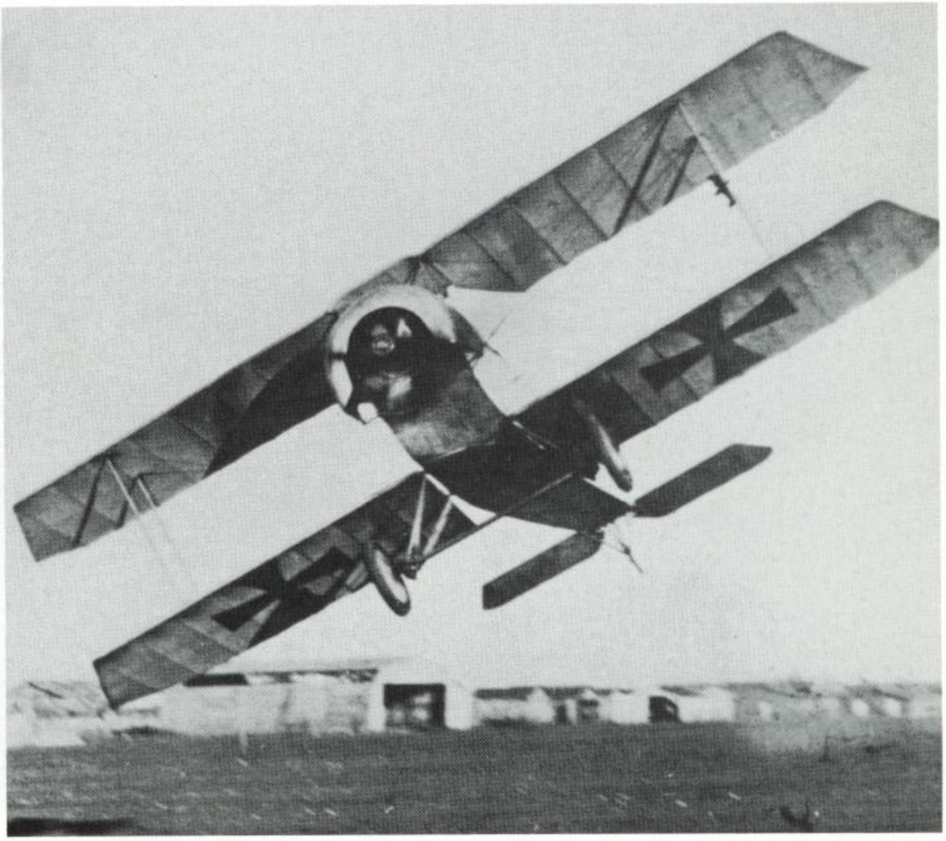

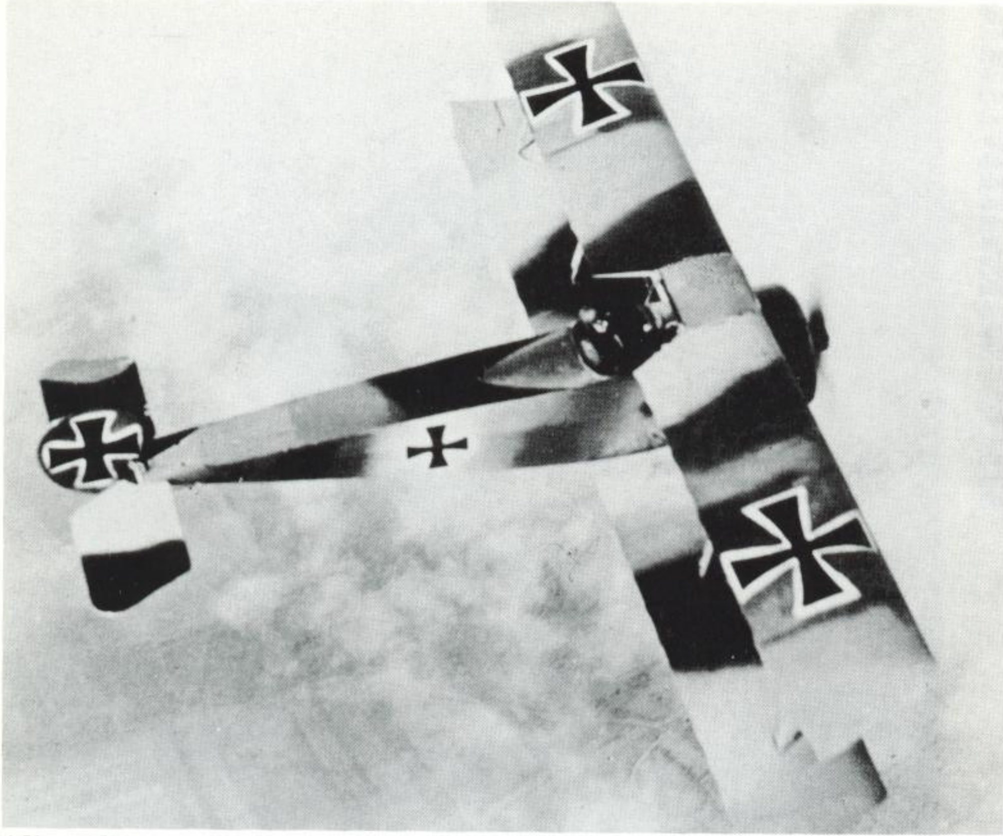

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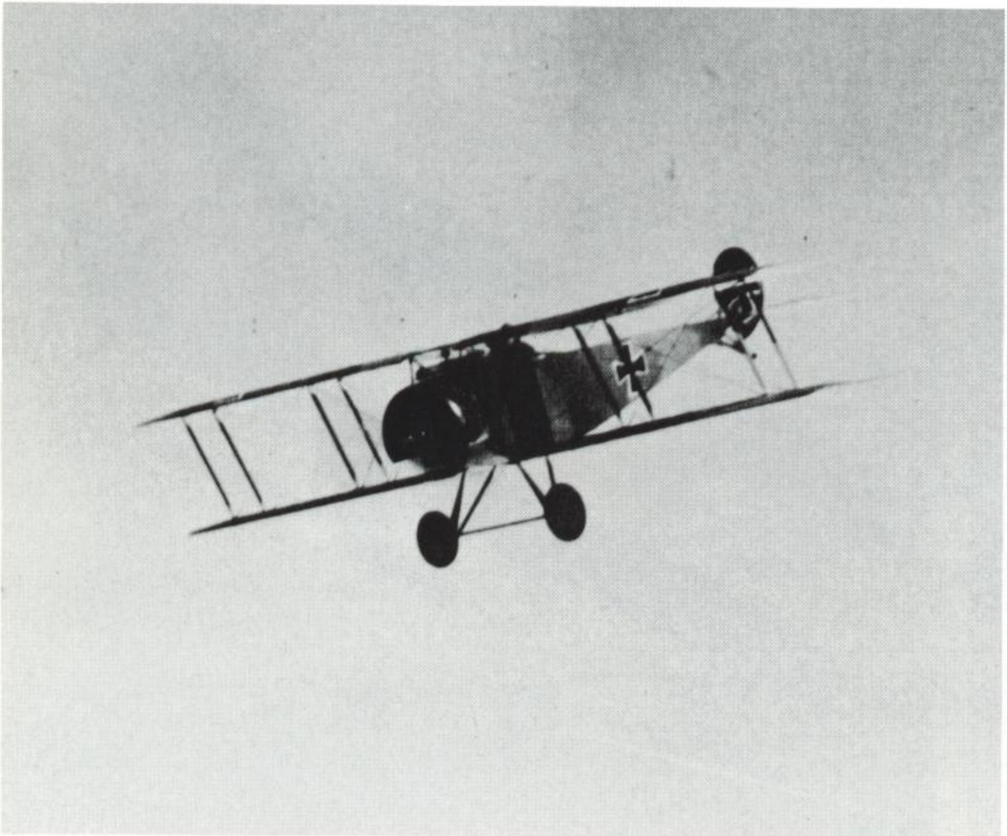
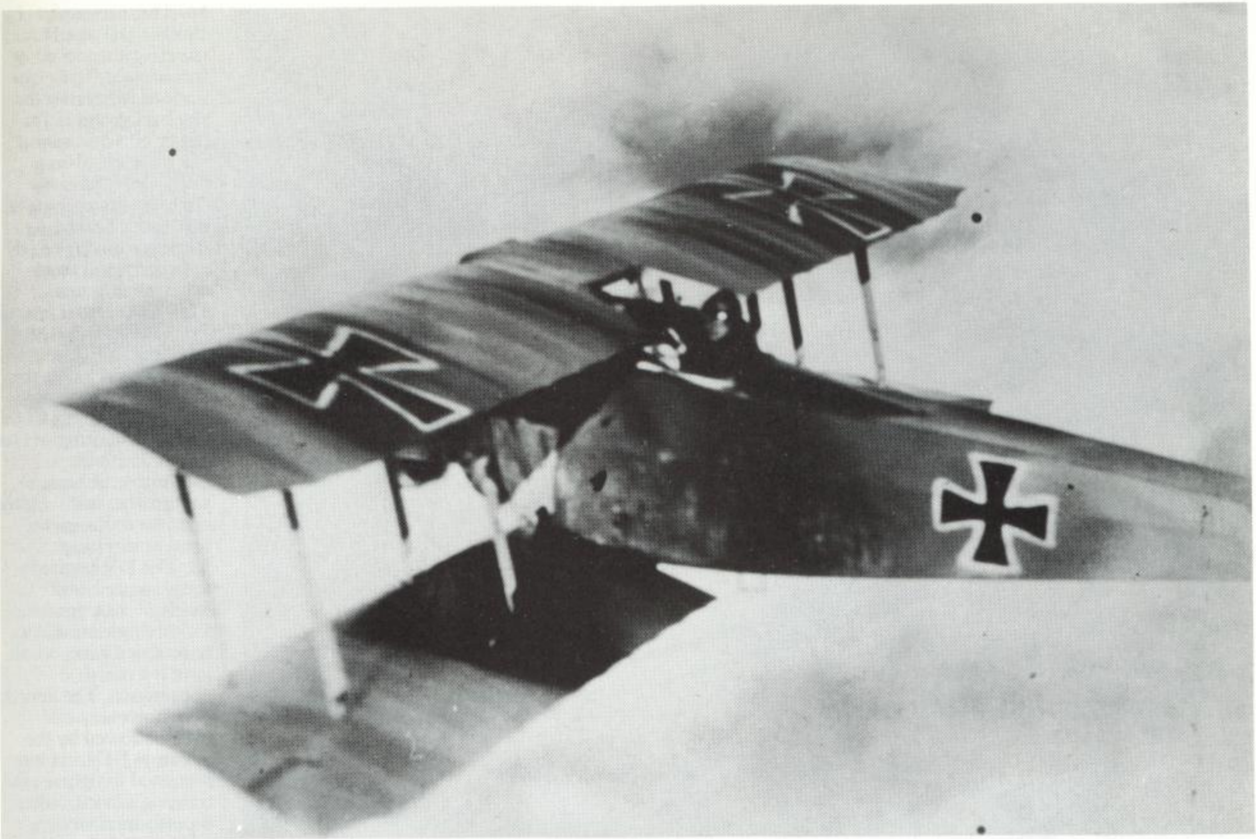


52,53,54. Orders for some 130 Fokker DII biplanes were placed in 1916, and the first examples entered service towards the end of July. Early machines, such as those illustrated on these pages, featured wing-warping control, but later machines had ailerons fitted for improved lateral control. This rare sequence of photos is believed to be of one particular machine taken on the same day and offers some interesting and unusual angles. The camouflage pattern is of some note and appears to be composed of at least three colours with soft demarcation lines.

55. Another unusual view of a Fokker DII fighter, with a light coloured fuselage and white fields beneath the national insignia. Among many well-known pilots who flew the type was Oswald Boelcke, who fitted a dummy 'gunner' behind the cockpit as a ruse in the hope that it would act as a deterrent to any potential attacker.



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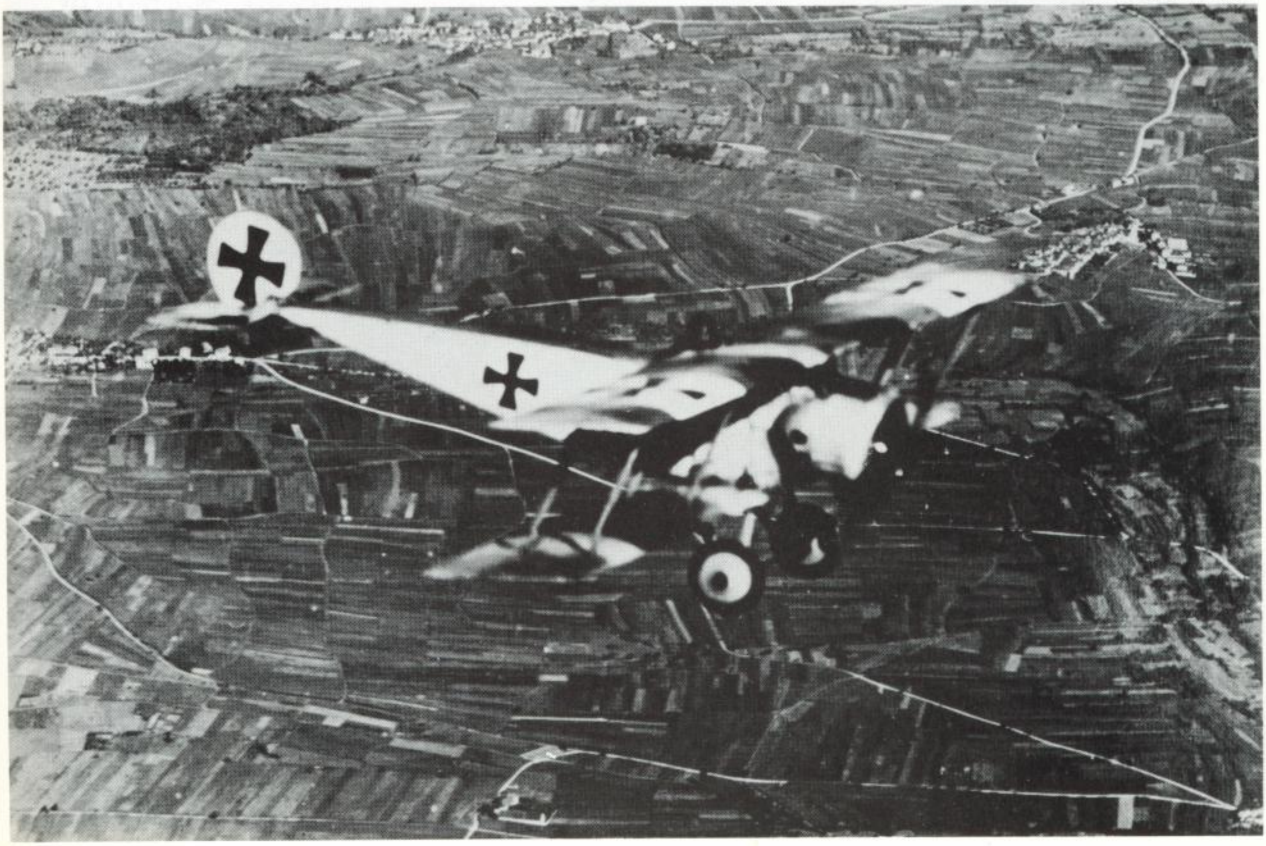

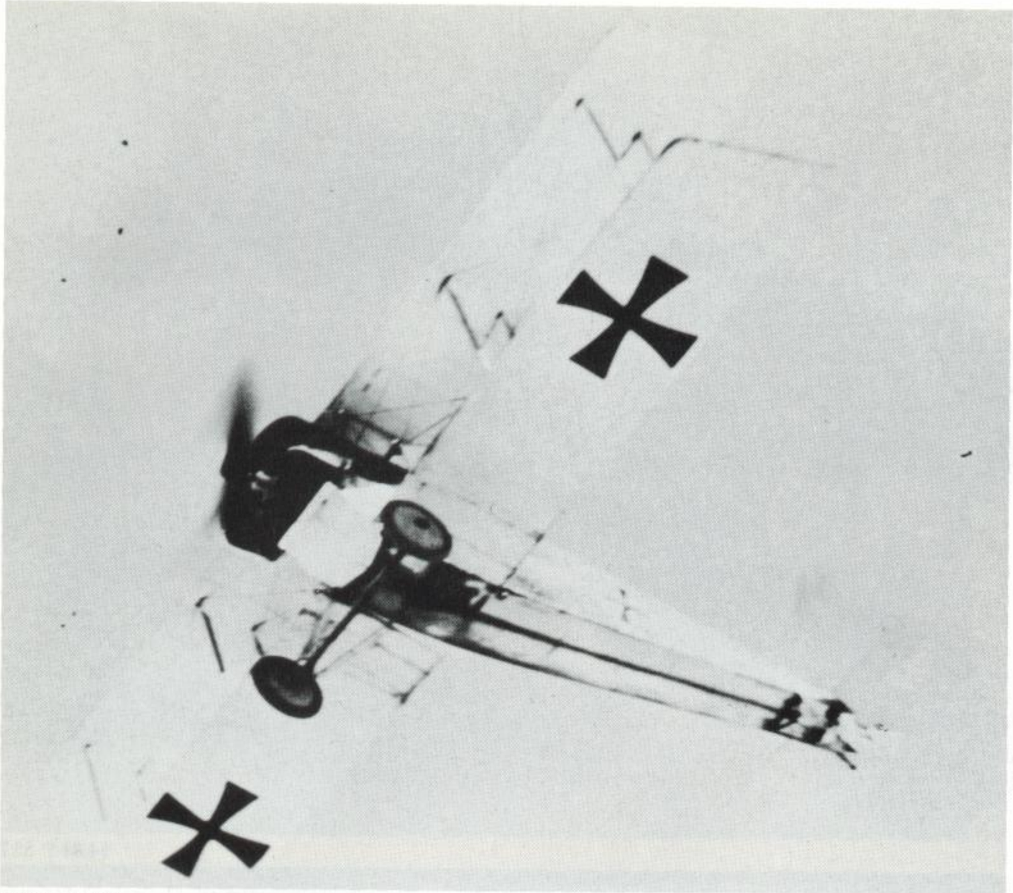

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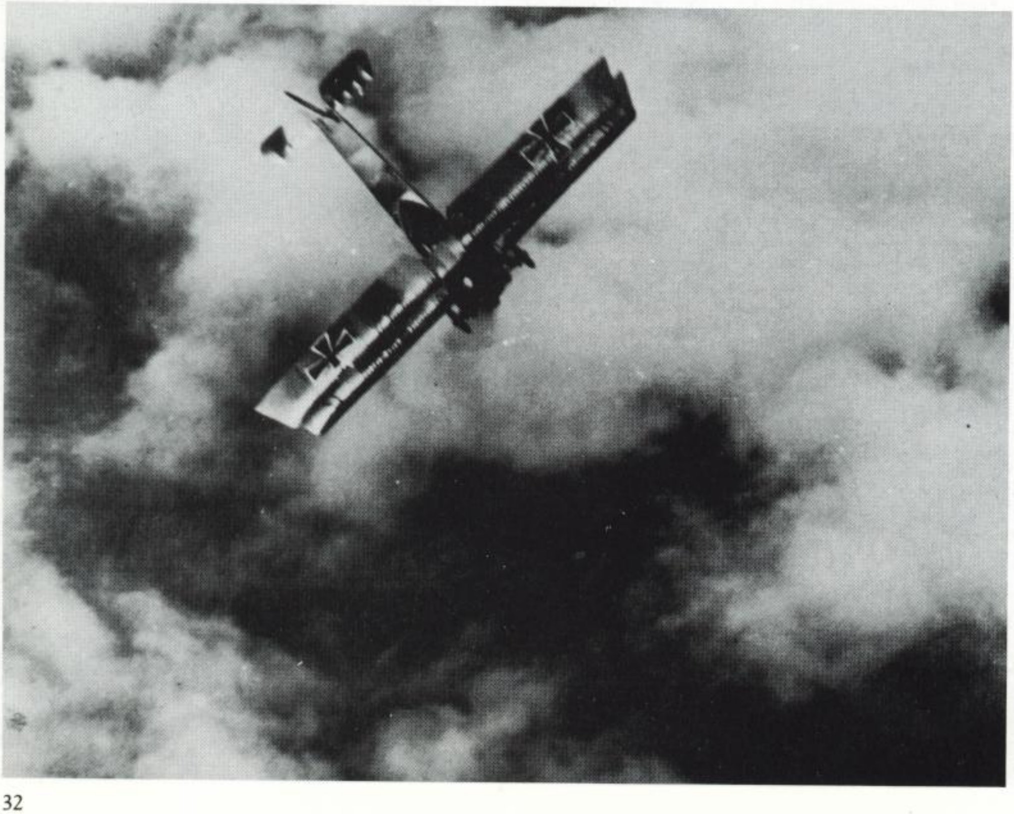
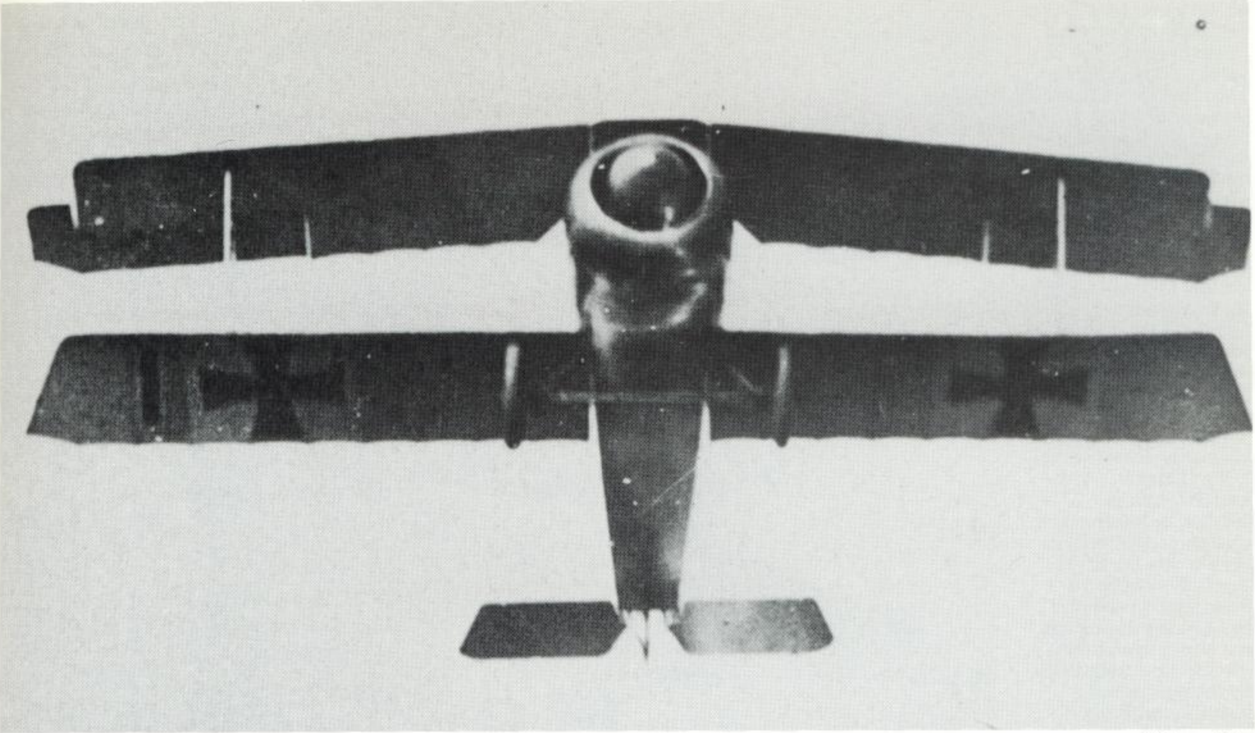


56. This rare aspect of a Fokker DII emphasizes the effectiveness of the (presumably) pale blue undersides against the sky background. The heavy oil saturation of the fuselage fabric is noteworthy, and the staining also extends to the centre-line lacing: these are features rarely appreciated in most other photographs.

57. The compact lines o the Fokker DII are well captured here as the fighter dives below the camera-plane. The thin white surrounds to the national markings do no compromise the camouflage scheme to any great extent – a stark contrast to the earlier form of markings.

58. The DV boasted a more streamlined fuselage than previous Fokker fighters and a redesigned wing cellule gave it a rakish appearance. The aircraft was, however, overshadowed by the Albatros DIII and was relegated to fighter pilot training schools, where it performed sterling service.

59. A Fokker DV prepares to land. The type featured a completely circular cowling which restricted cooling and led to a tendency for the engine to overheat in hot weather. Some 300 examples of the DV are believed to have been delivered, and at least two were used by the *Richthofen Geschwader* for training use.



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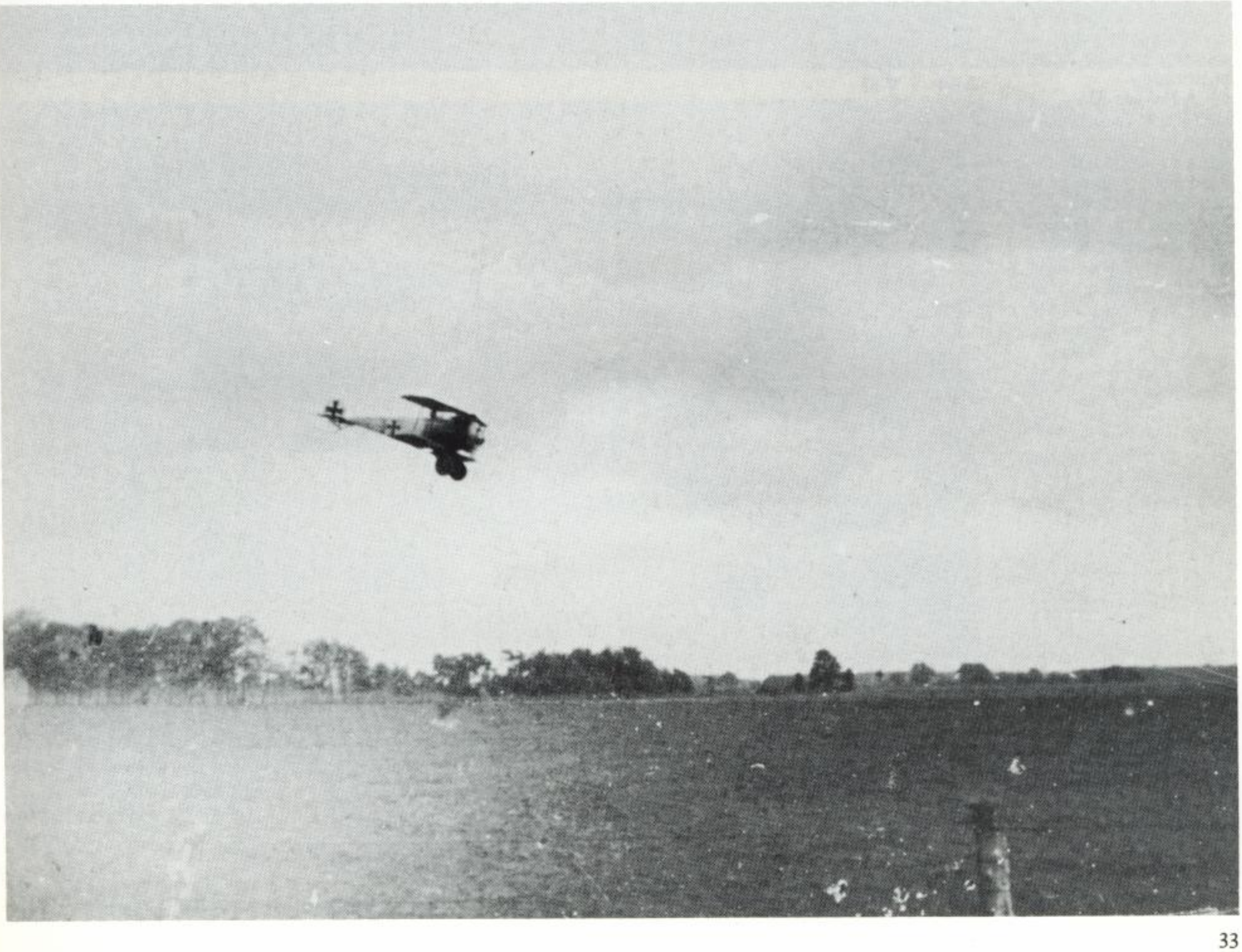
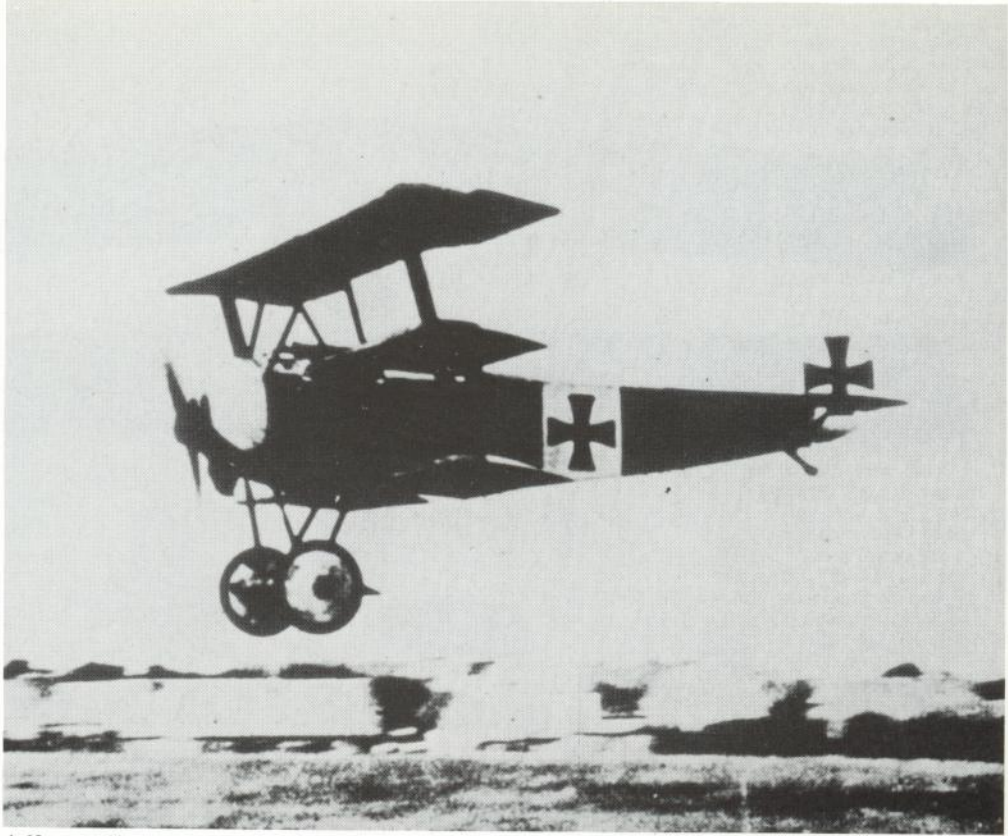


60. A view of F1 102/17, with cowling and metal panels in natural finish; see also photograph 1. The three F1 triplanes were finished in an overall turquoise blue, with the uppersurfaces treated to a application of olive dope distributed by brush to give a streaky appearance.
61. Although of poor quality, this photograph shows a genuine Fokker DrI. Note the lower wing-tip skids; on the original print, streamers can be seen attached to the trailing edge of the lower wings. Although comparatively slow, the DrI was highly manoeuvrable in combat, making it an ideal combat aeroplane.
62. The Fokker DVII was undoubtedly the finest fighter produced by Germany during the war and entered front-line service during 1918. Its thick-sectioned, high-lift, cantilever wings endowed the aircraft with excellent climbing qualities as well as enabling a steep ascent to be maintained at altitude.
63. A Fokker EV (DVIII) of *Jasta 6.* This rotary-engined parasol fighter was the last Fokker to see service in the First World War, but its use, during the closing months of the war, was limited since early production machines were plagued by structural failures.



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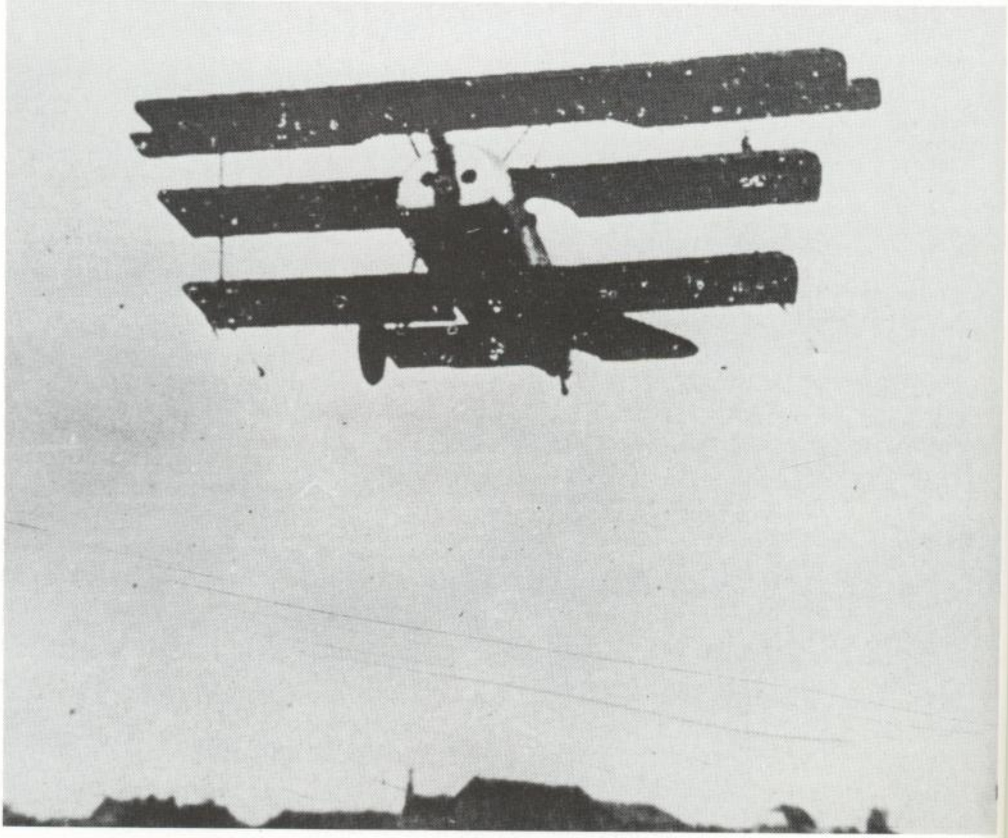

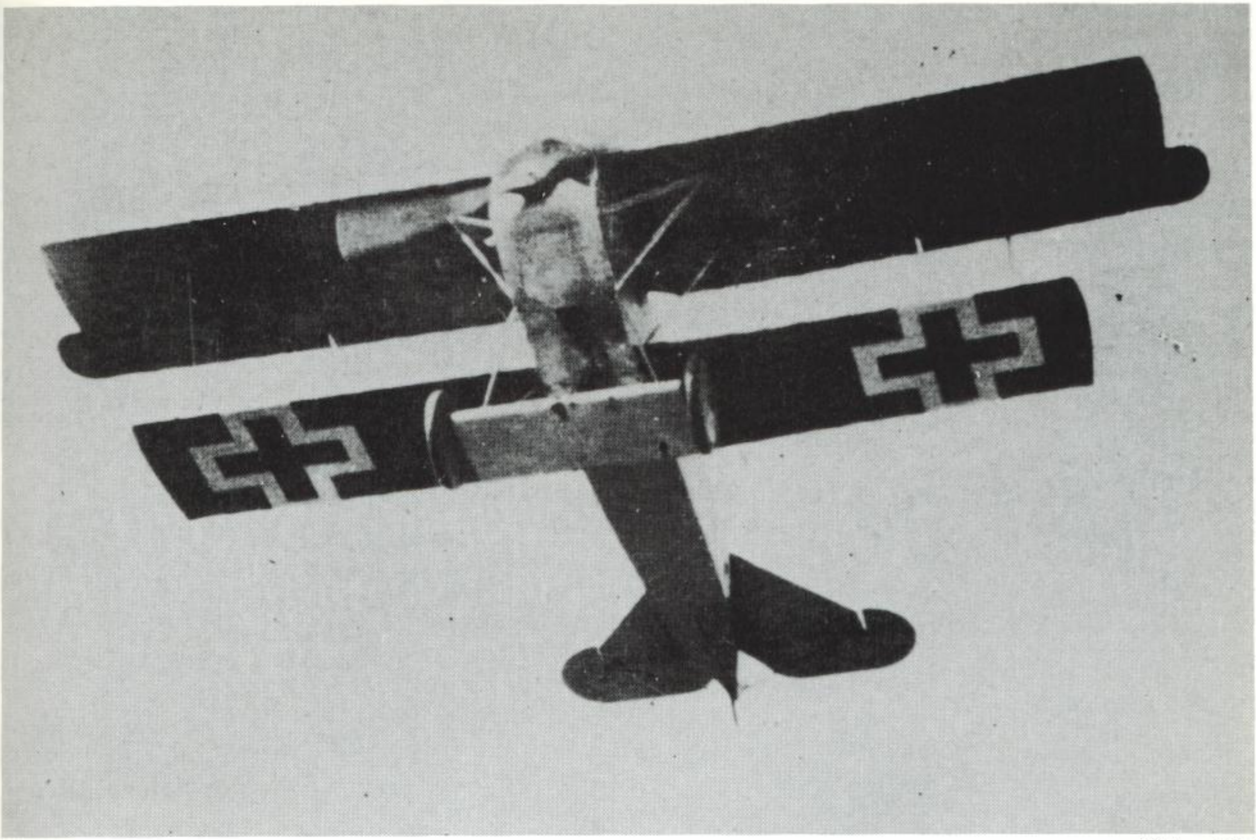

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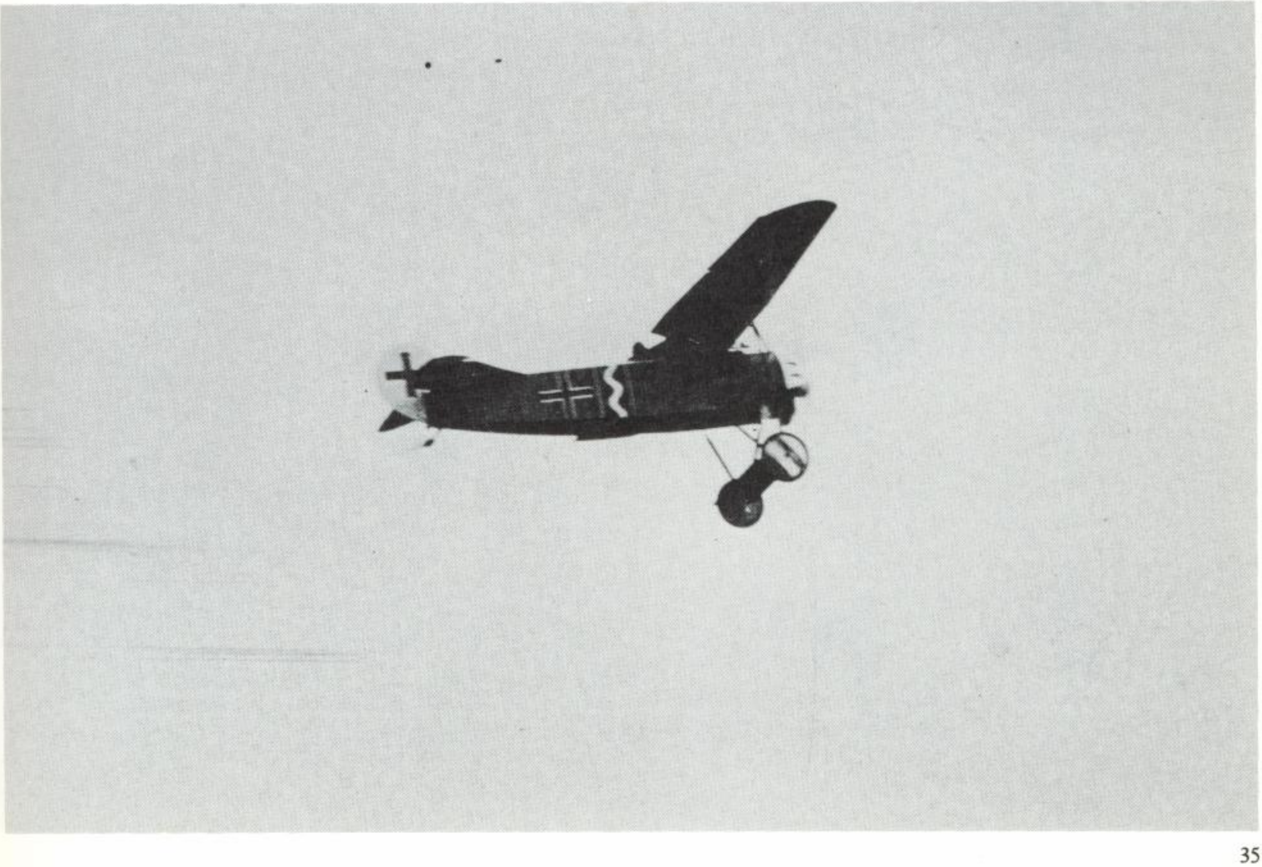

64. The Fokker EI monoplane, and its derivatives, was responsible for the so-called 'Fokker Scourge' of 1915 and for a while achieved complete superiority over RFC airmen in their poorly armed BE2 reconnaissance machines. Among the most famous exponents of the Fokker Monoplane were Max Immelmann and Oswald Boelcke.

65. Synchronized LMG.08 machine guns were first fitted to Fokker E type monoplanes in the summer of 1915. The EIII version of the aeroplane was issued in small numbers (and usually in pairs) to reconnaissance units to protect two-seaters on patrols over the lines. An EI is illustrated.

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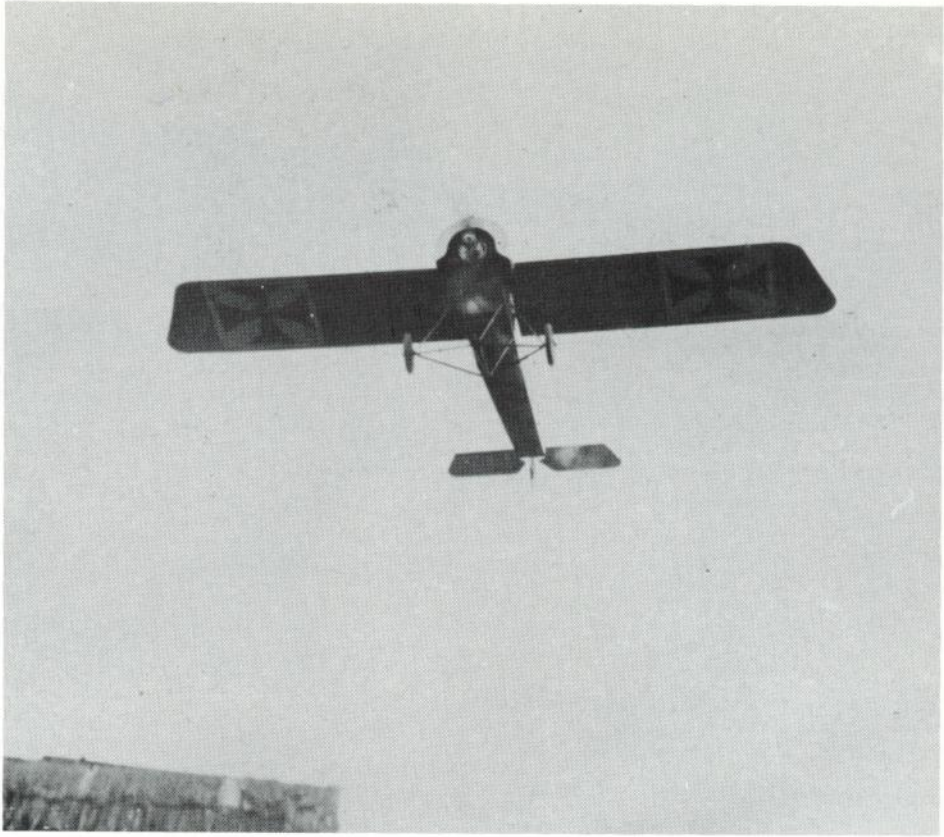

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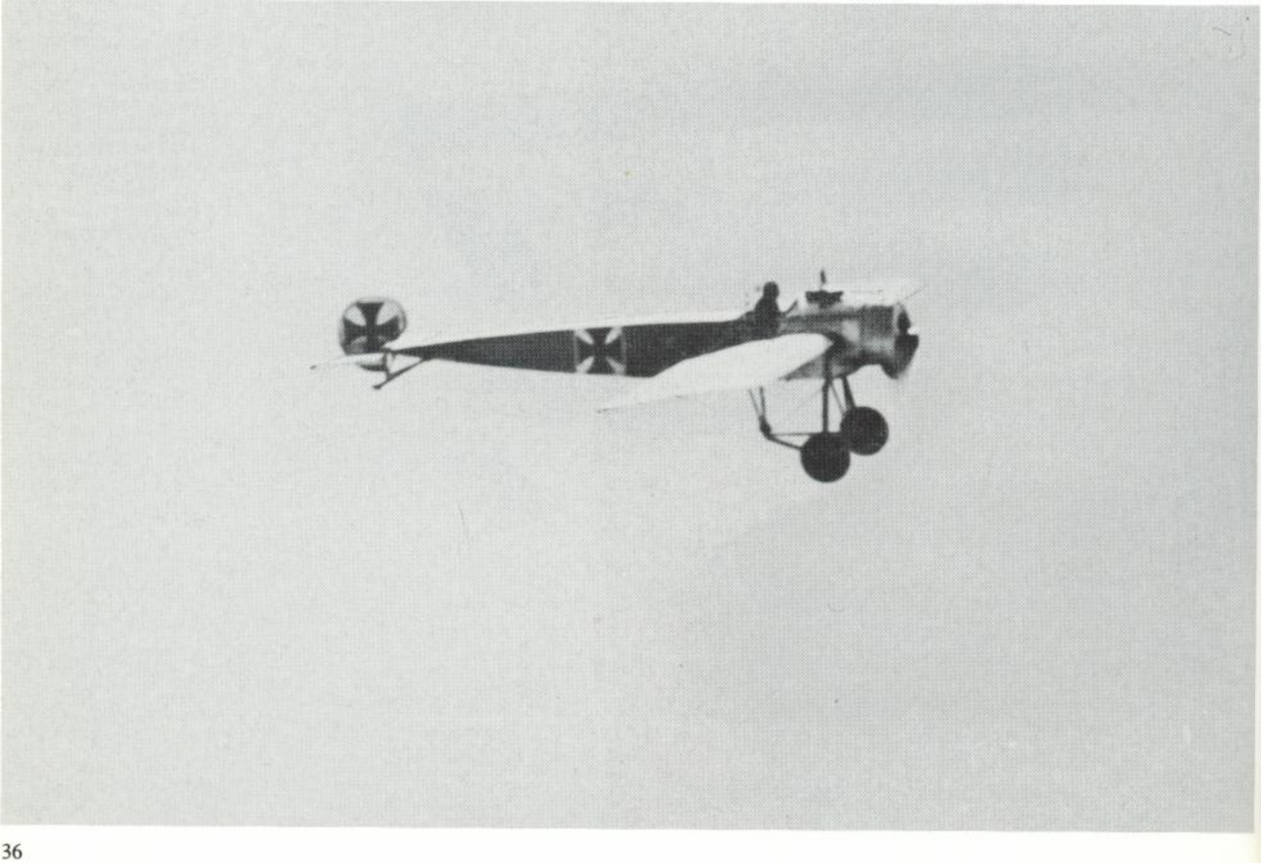
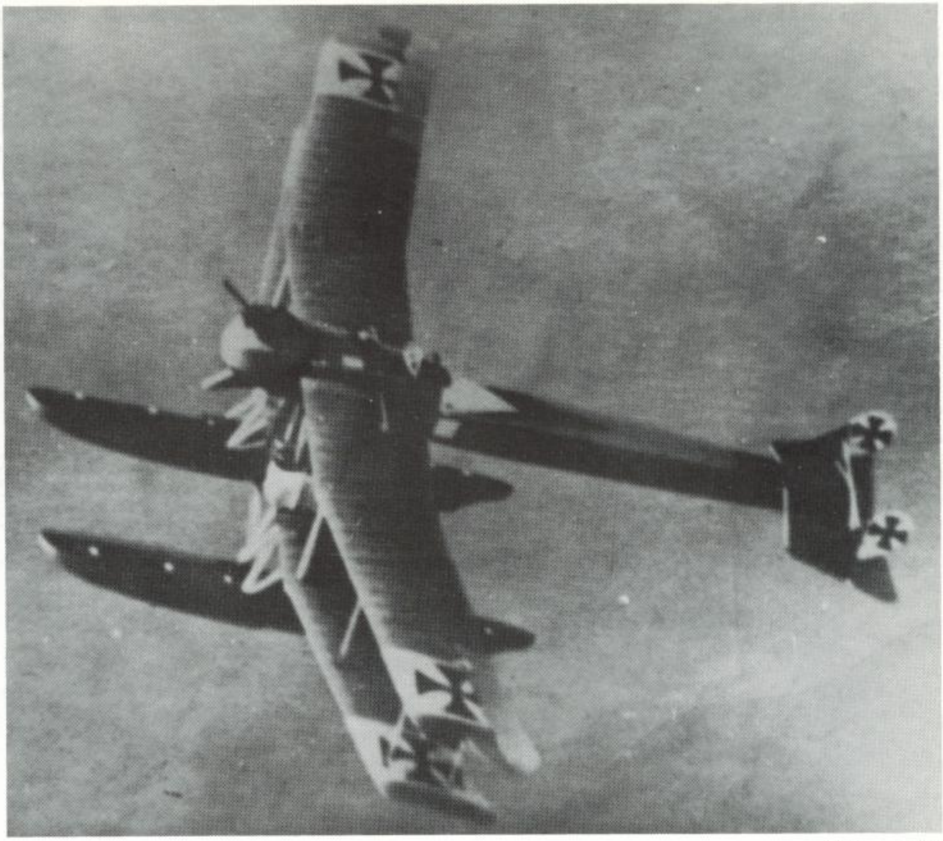


66. The Gotha UWD *Ursinus-Wasser-Doppeldecker* (Ursinus float-biplane) No. 120 was the sole example of its type. The basic design, anticipating the Handley Page Heyford by some 20 years, permitted both engines to be situated close inboard and thus aided handling should one of the powerplants fail.

67. Of similar configuration to the UWD, the Gotha Ursinus GUH GI first flew on 27 July 1915. Several examples were built and employed on active service; three crew members were carried and the gunner in the front cockpit enjoyed a superb field of fire.



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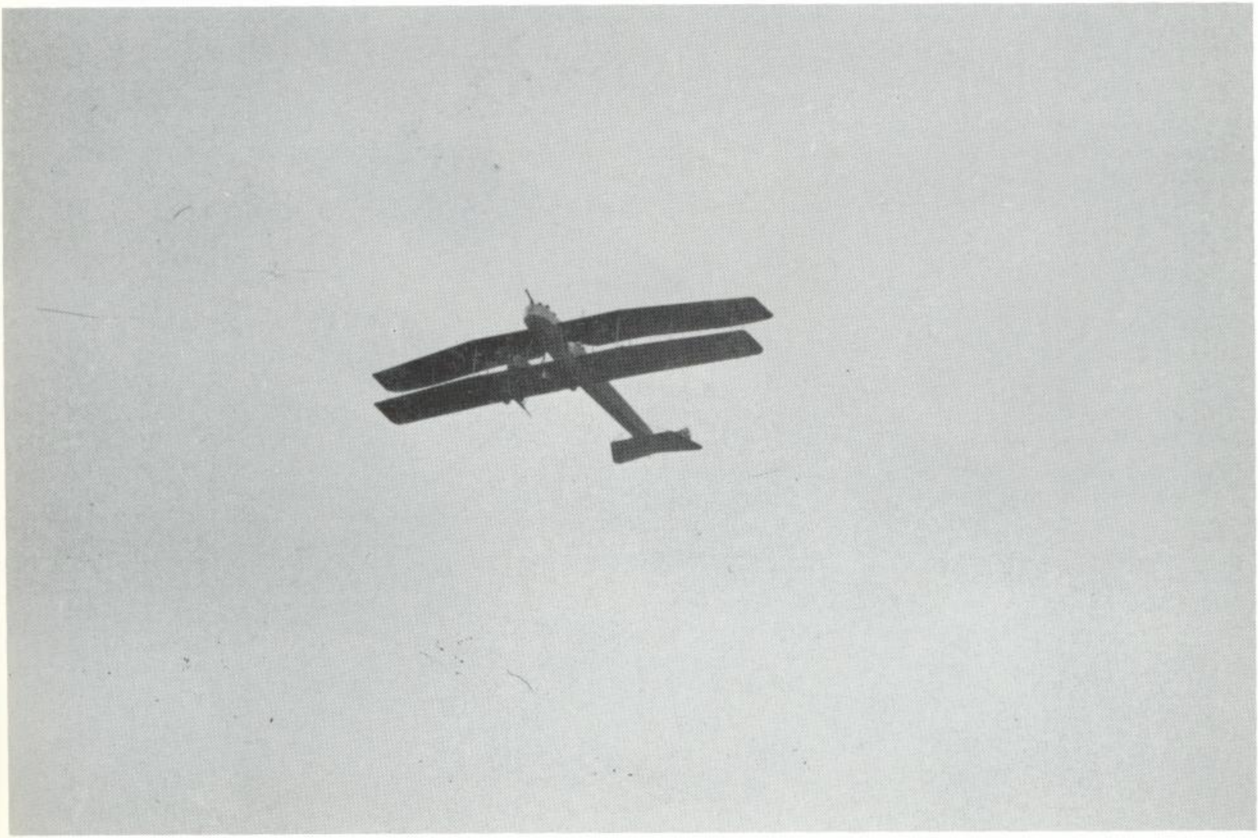

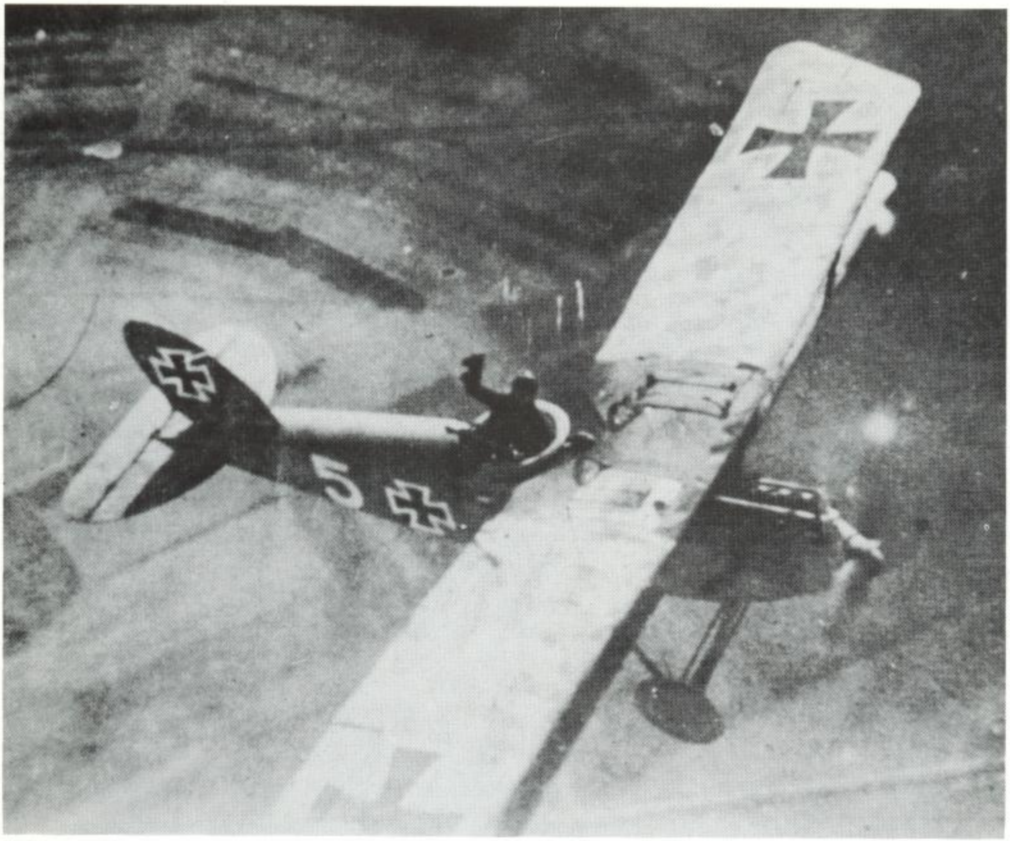

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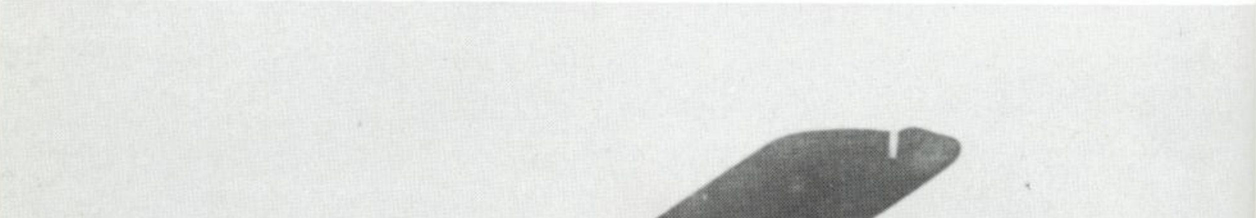
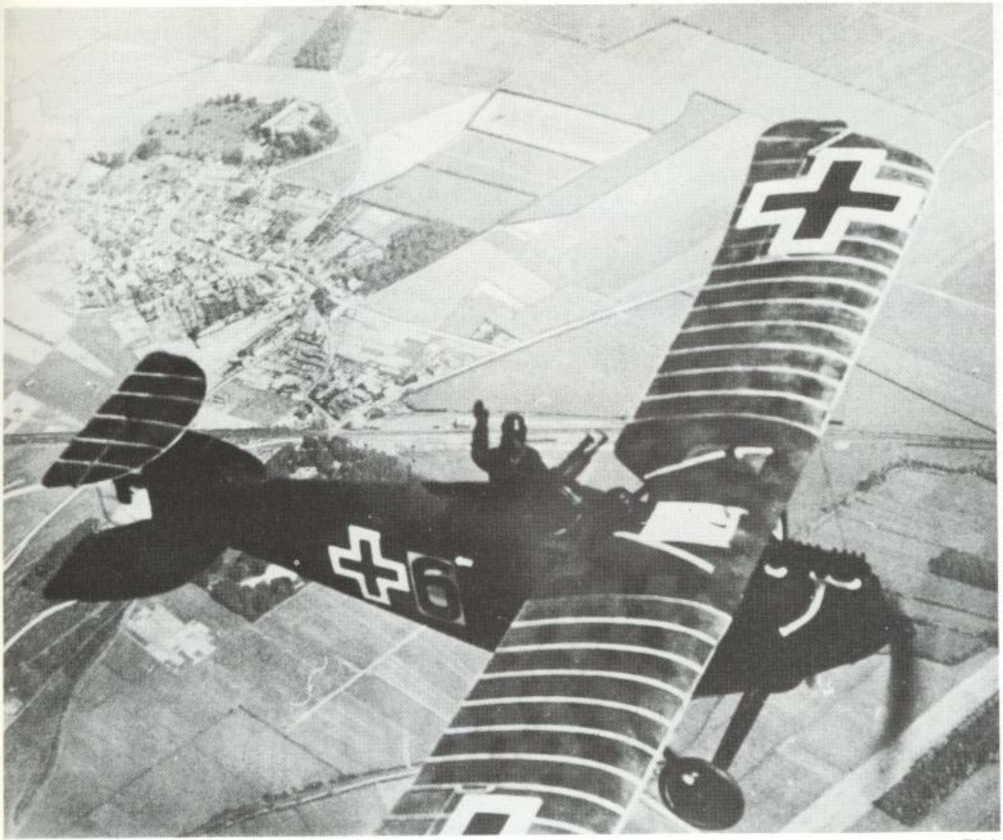


68. A Halberstadt CLII of *Fl.Abt.A212*. These aeroplanes were designed to the new, light C-Type (CL) specification in 1917 to equip *Schutzstaffeln* (protection flights) and were built in large numbers. The Halberstadt CLII was particularly successful in anti-personnel attacks on Allied trench systems.

69. The Hannover CLIII was unique amongst single-engined machines in having a biplane tail unit, the purpose of which was to reduce the tailplane span and thus afford a wider field of fire for the observer. The compactness of the Hannover's design provided considerable manoeuvrability, and large balanced ailerons gave good lateral control.

70. A familiar Hannover CLIIIa photograph which emphasizes the pale colour of the wing rib tapes over the printed 'lozenge' fabric covered wings and tailplane. Note how the plywood covered centre-section has been carefully painted to match the surrounding fabric pattern.

71. A Hannover CLII on patrol. The type is quickly distinguished from the CIII by its ailerons, which on the CII were not overhung as on later versions. Hannovers came into operational use towards the end of 1917 and were justly treated with respect by Allied pilots.



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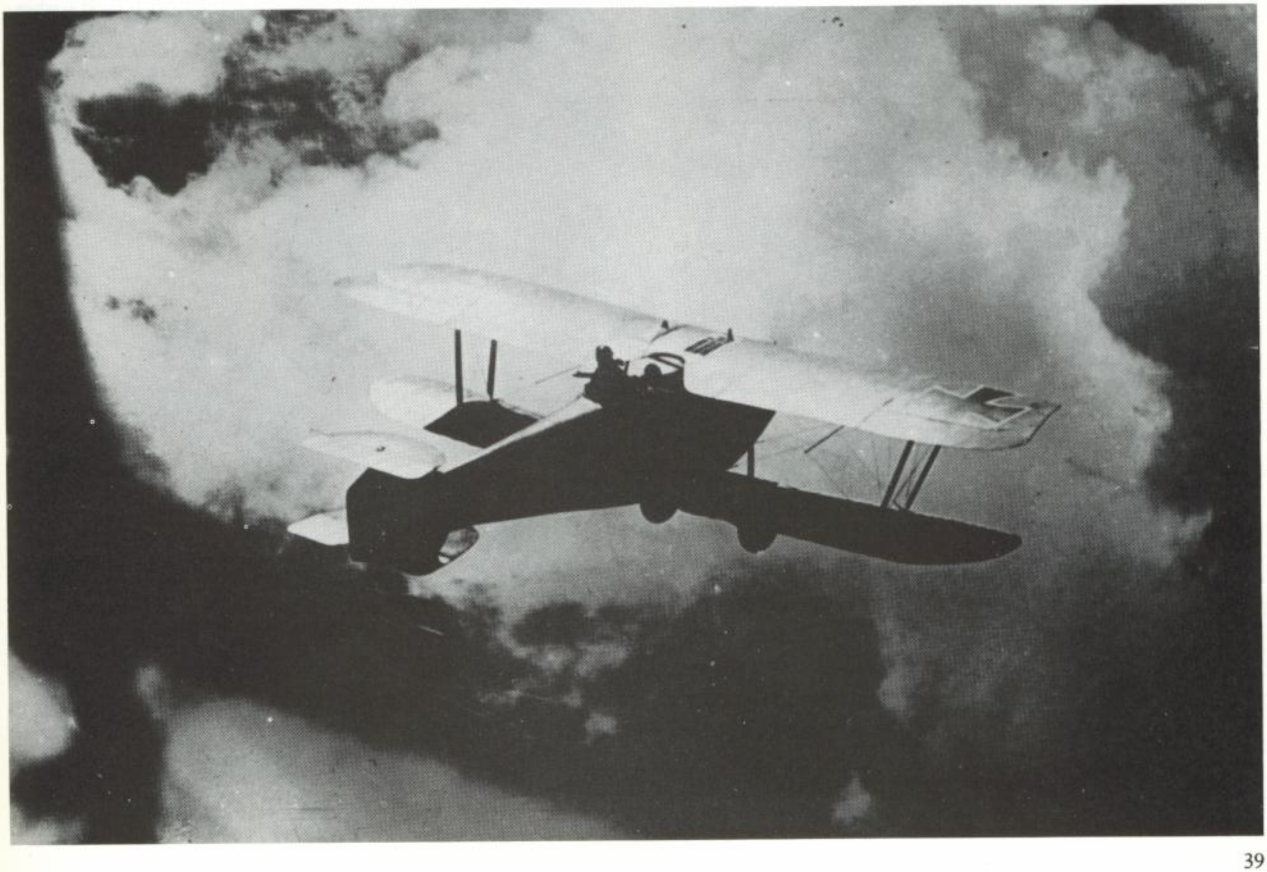

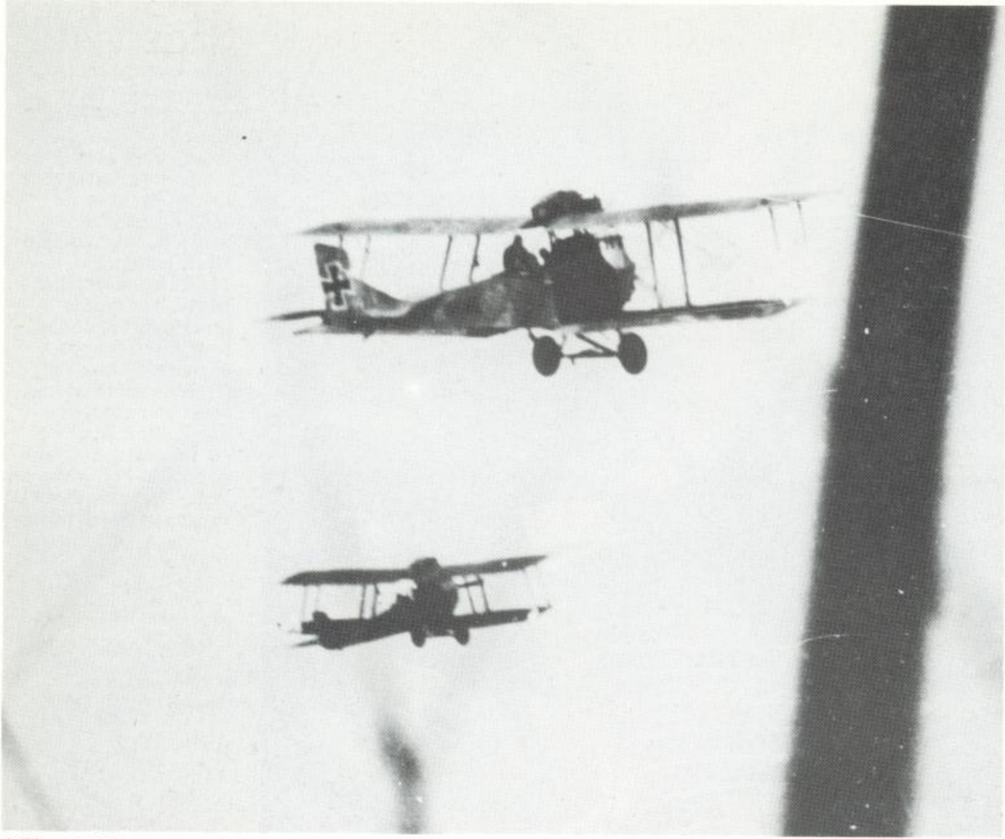

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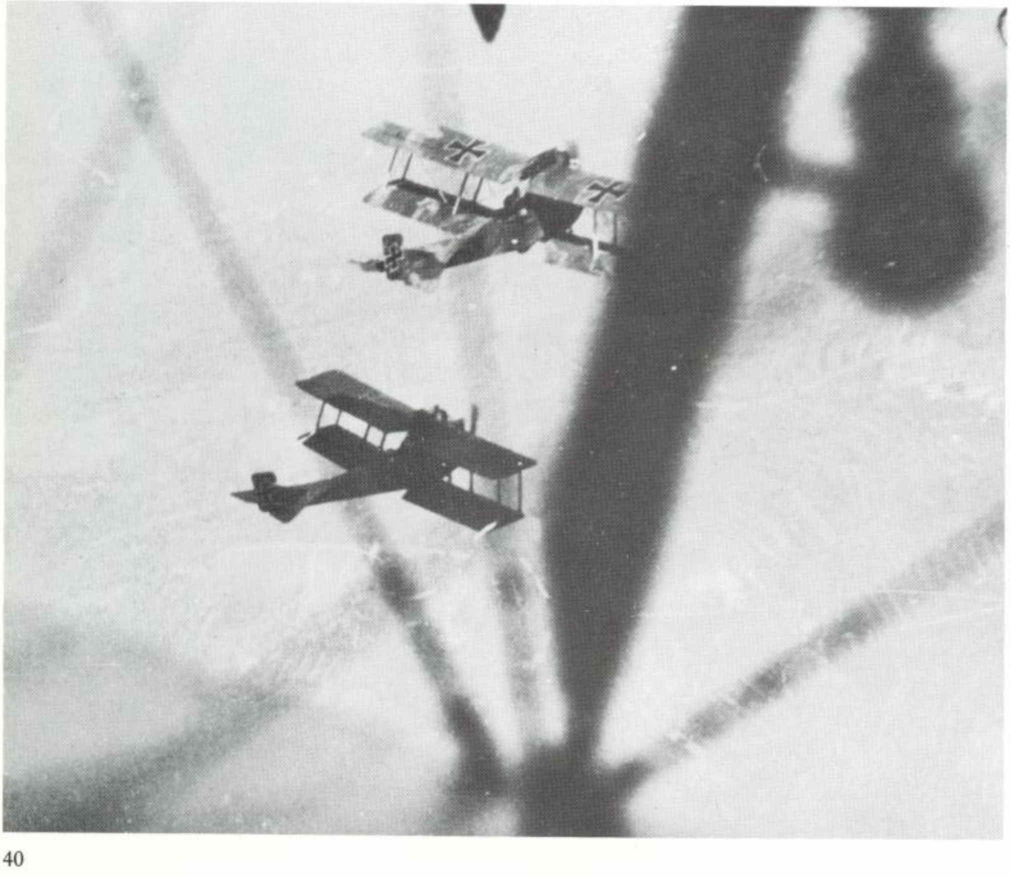
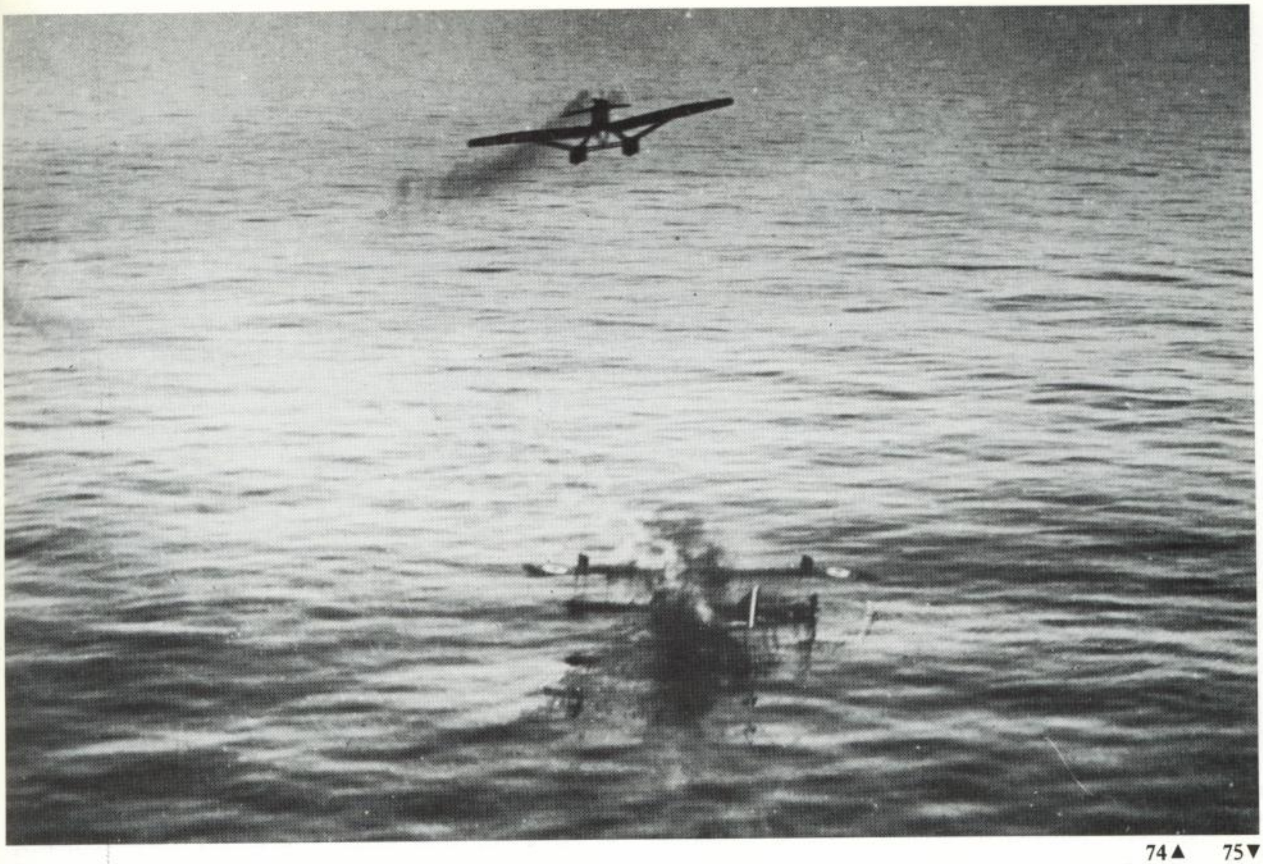


72,73. Two photographs from the same sortie; the machines are Hansa Brandenburg CI reconnaissance aeroplanes in Austro-Hungarian service. Designed by Ernst Heinkel, the CI was built under licence by Phönix und Ufag and became the mainstay of the *Luftfahrttruppen* for almost three years.
74. Genuine combat photographs of the first air war are particularly scarce. In this engagement, in late July 1918, five Hansa Brandenburg W29 floatplanes attacked and forced down F2a flying boat N4305. Two of the Felixstowe's crew were killed and three rescued by the Royal Navy following the destruction of the British machine by the German seaplanes.
75. Hansa Brandenburg W12 fighter seaplanes proved worthy opponents of Allied flying boats. One of the German Navy's most skilled pilots, *Oberleutnant* Friedrich Christiansen, shot down the British rigid airship *C27* on 17 December 1917 while flying a W12. These machines were also used for reconnaissance duties.



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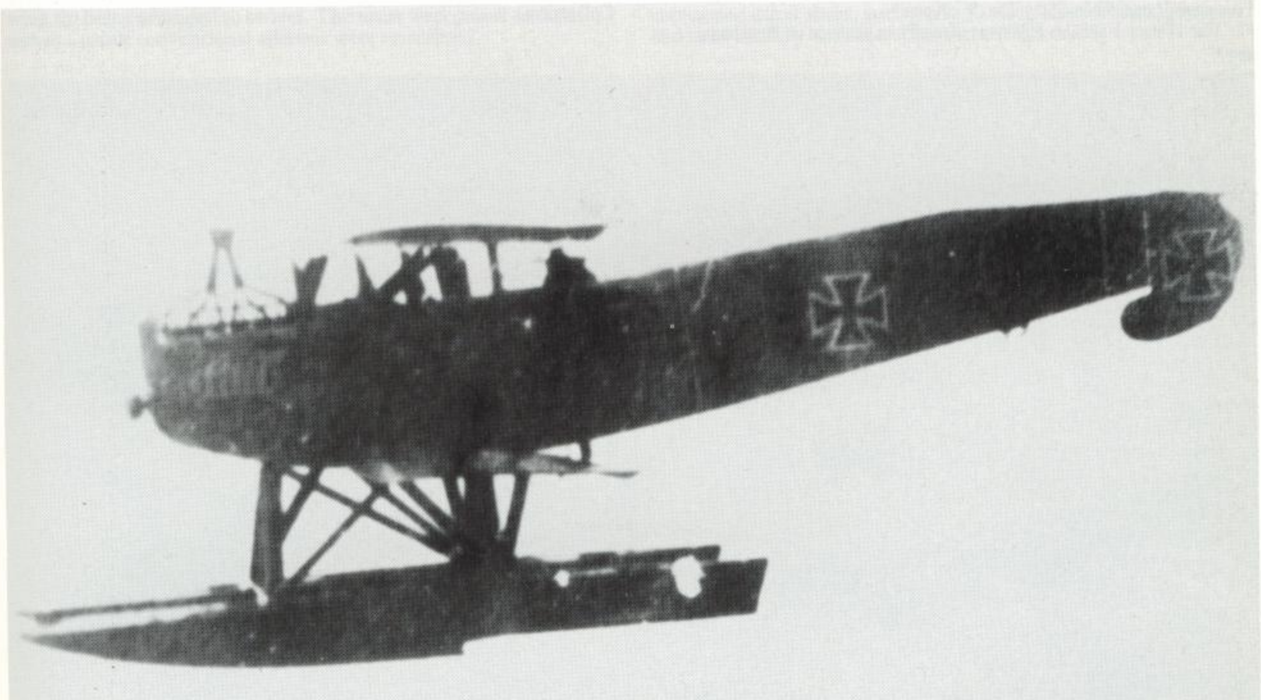

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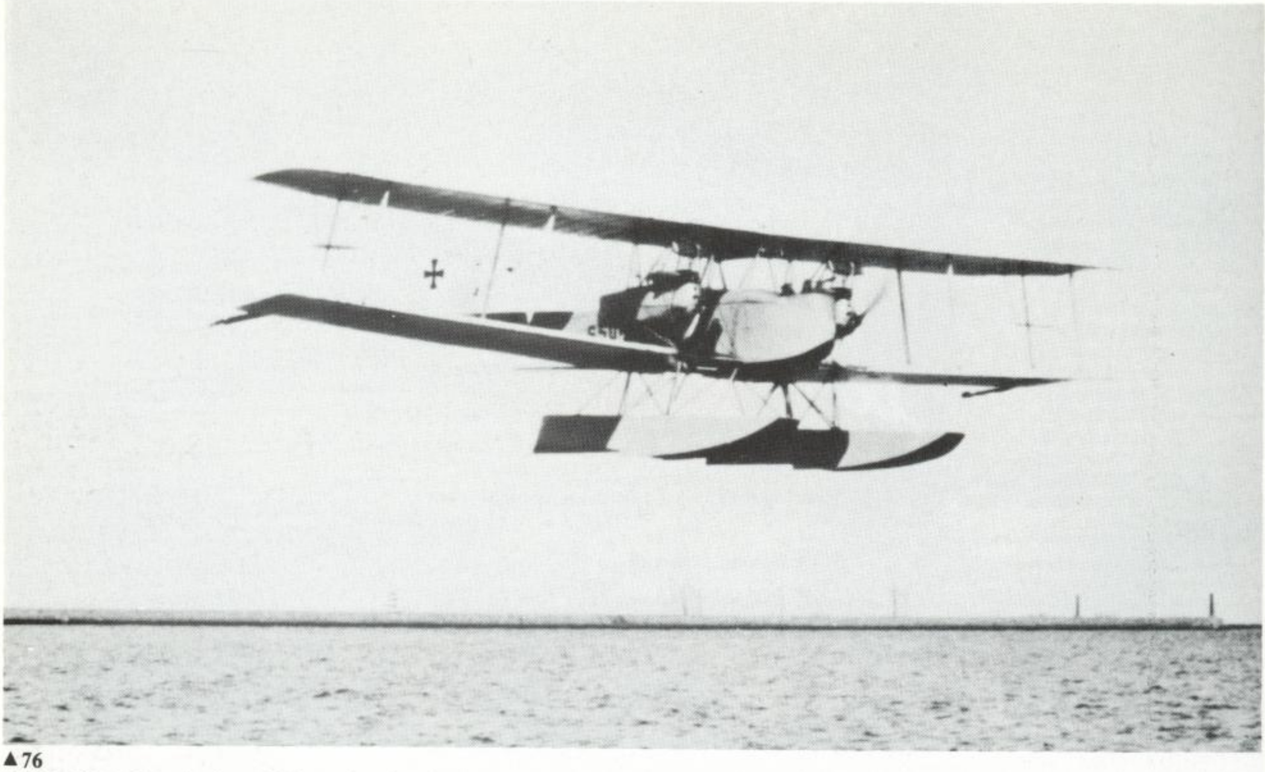

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76. The Hansa Brandenburg GW was developed as a torpedo strike aeroplane during 1916, and a total of 26 were eventually supplied to the German Navy. The prototype had triple vertical tail surfaces but production machines were fitted with a simplified arrangement. This aeroplane is No 650. (Dr. V. Koos)

77. The Henry Farman F20 was already in service in Belgium, France and Great Britain when war broke out in August 1914, but, lacking sufficient power for anything other than short scouting sorties, Farmans on the Western Front had been relegated to the trainer role by the middle of 1915. (J.M. Bruce/G.S. Leslie Collection)

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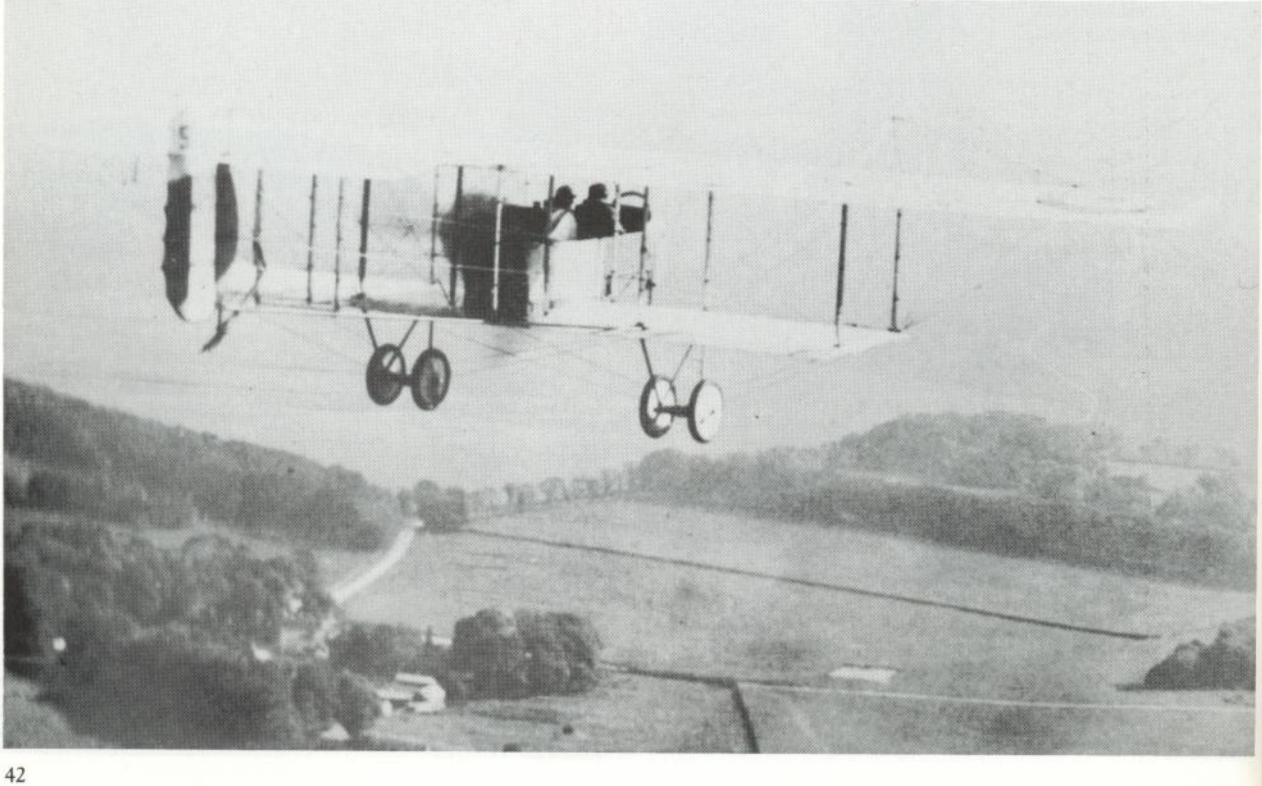

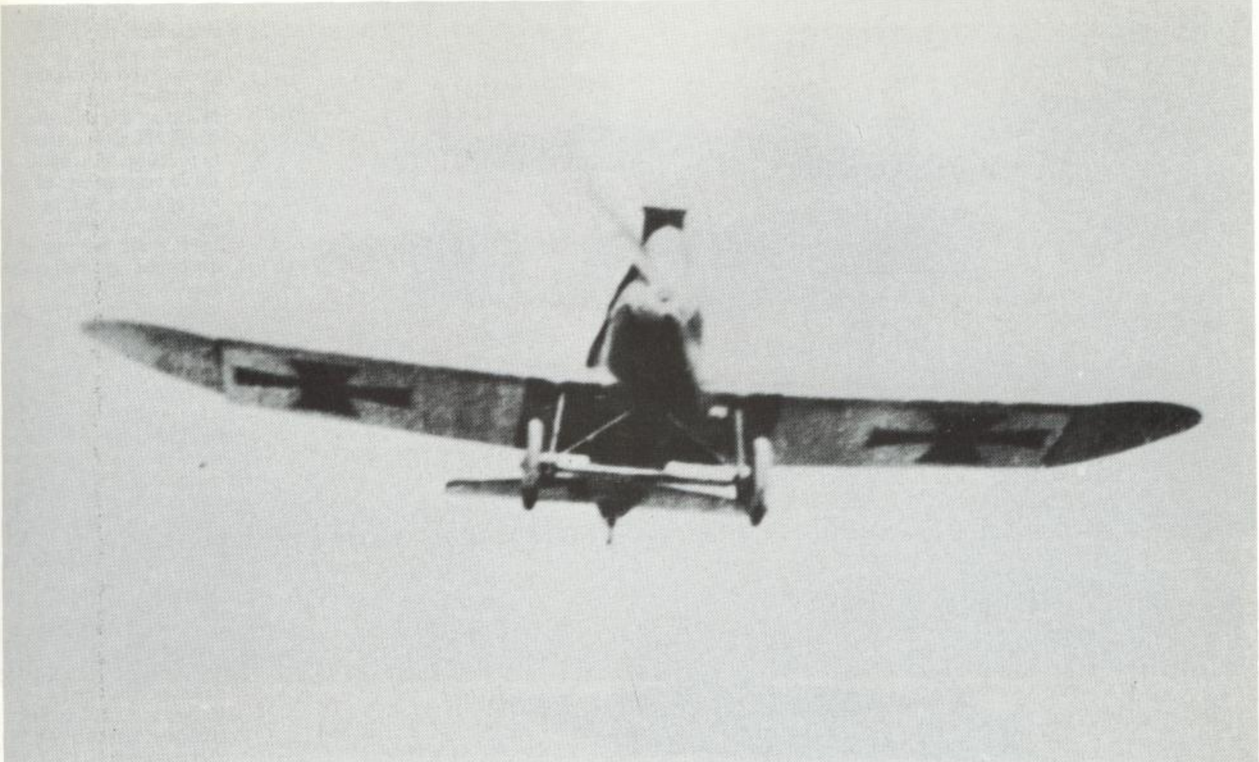

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78. Built during 1917, the Junkers J7 metal monoplane was the prototype for the later DI. Several versions were produced, and the original J7 (illustrated) boasted unorthodox ailerons, each complete wing tip being arranged to swivel. The units were prone to flutter, and as a result conventional ailerons were retrofitted.

79. Two Junkers J10 (CLI) monoplanes on patrol. The metal CLI was put into production during the latter part of 1918 to replace the Halberstadt types of the *Schlachtstaffeln.* They were covered in corrugated dural sheet, and nearly 50 aeroplanes of the CLI type had been built by the time of the Armistice.

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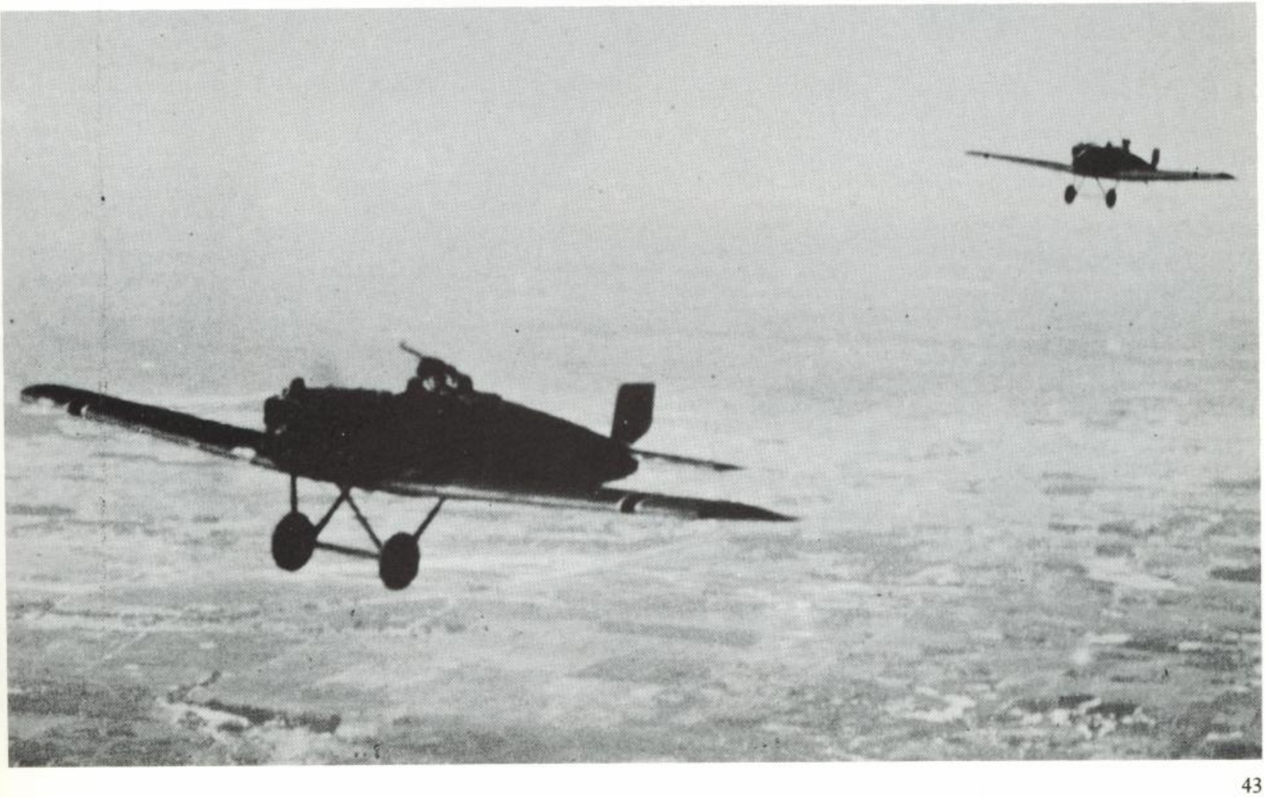

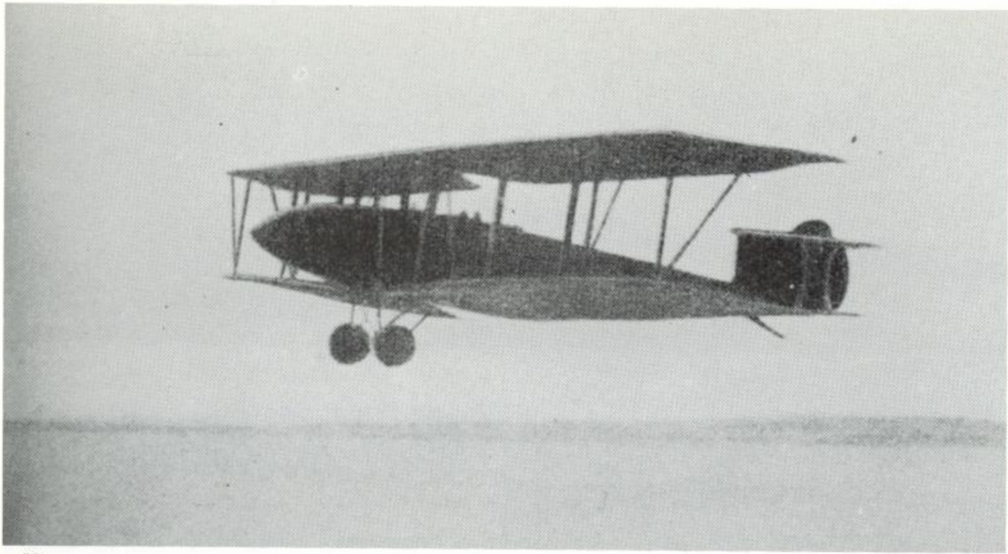

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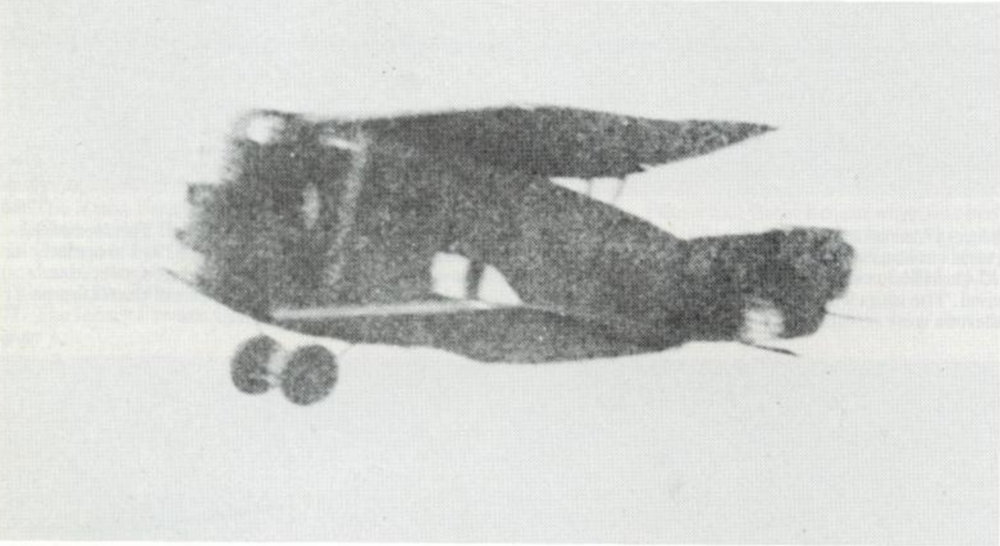

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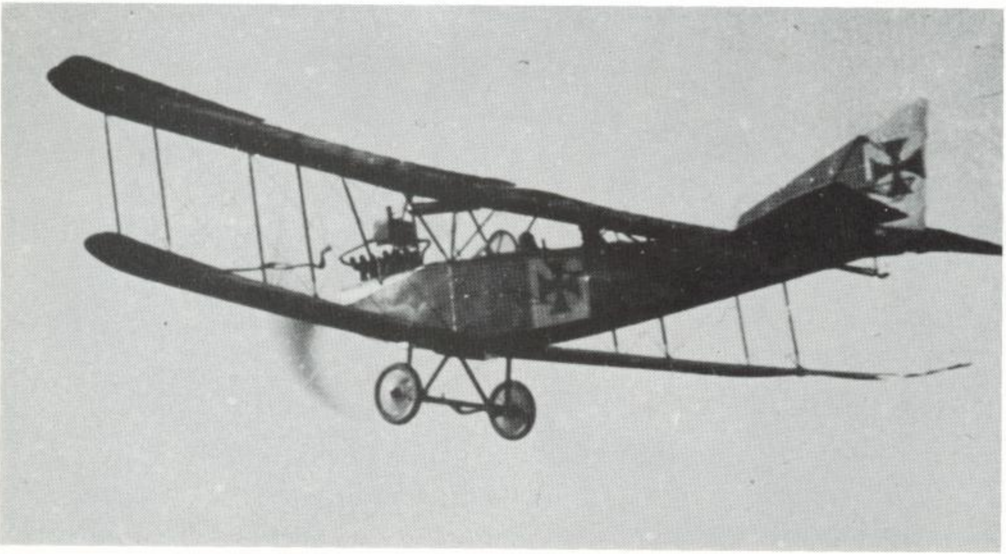
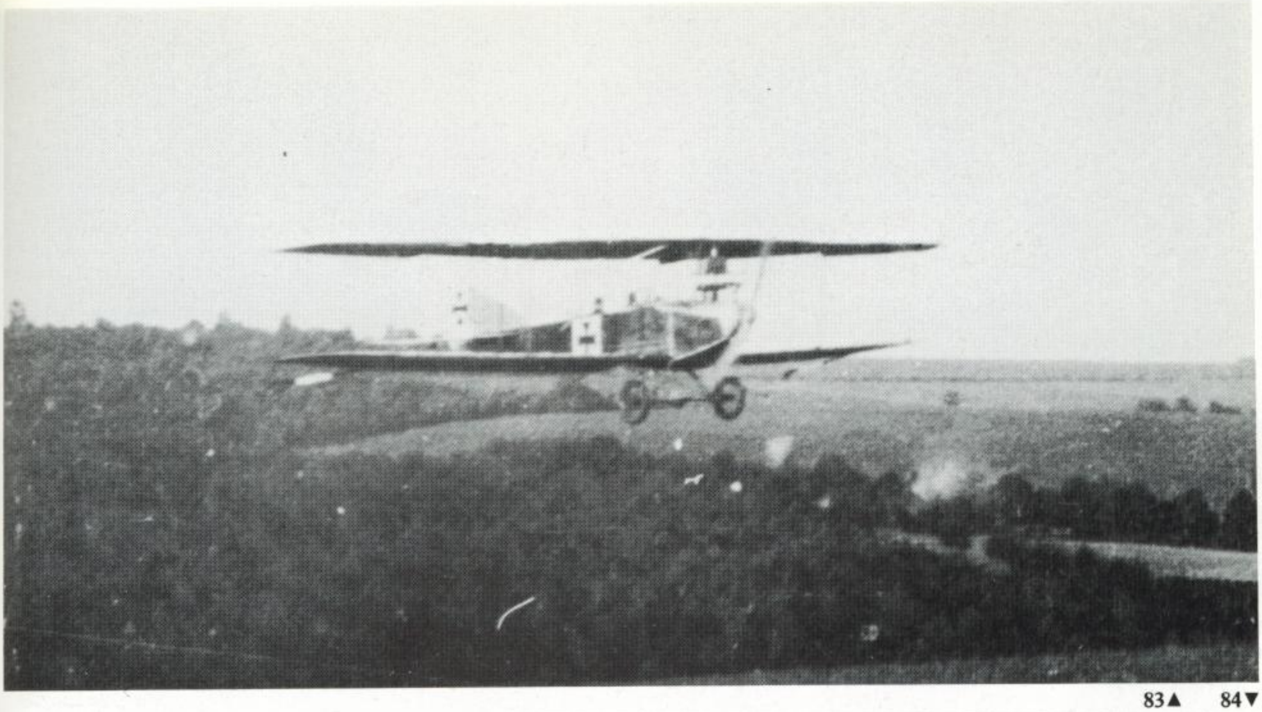


80. Although heavily retouched, this extremely rare photograph shows the enormous Linke Hoffman RII in flight. The Li Ho RII carried four 260hp Mercedes DIVa engines buried in its capacious fuselage and spanned nearly 139ft, making it one of the biggest aircraft of the First World War; indeed, it was the largest single-airscrew aeroplane ever built.
81. Another Linke Hoffman bomber design was the deep-fuselage RI. The first RI (8/15) made its maiden flight in spring 1917 but proved to be 'a handful', and in May the machine was written off. Only one other (40/16) was constructed and this, too, was unsuccessful and not rebuilt after a crash landing.
82. The Lloyd CII was developed by the Lloyd factory at Aszod during the early part of 1915. It was powered by a 145hp Hieronymus six-cylinder engine and, initially, was unarmed, although later machines carried a Schwarzlose machine gun for the observer. Note the 'claw' brake fitted to the undercarriage axle.
83. A comparatively powerful aeroplane by the standards of 1915, the Austro-Hungarian Lloyd CII had a good climb rate and enjoyed widespread use. The second series batch was built by the Wiener Karosserie und Flugzeugfabrik (WKF, or Vienna Carriage and Aeroplane Factory).
84. The Italian Macchi M5 flying boat of 1917 was powered by a 160hp Isotta Fraschini, giving it a top speed of 118mph. The M5 was fully aerobatic and, together with the Macchi M7, some 350 were built and issued to at least five Italian units. Two machine guns were mounted in the hull to fire forward.



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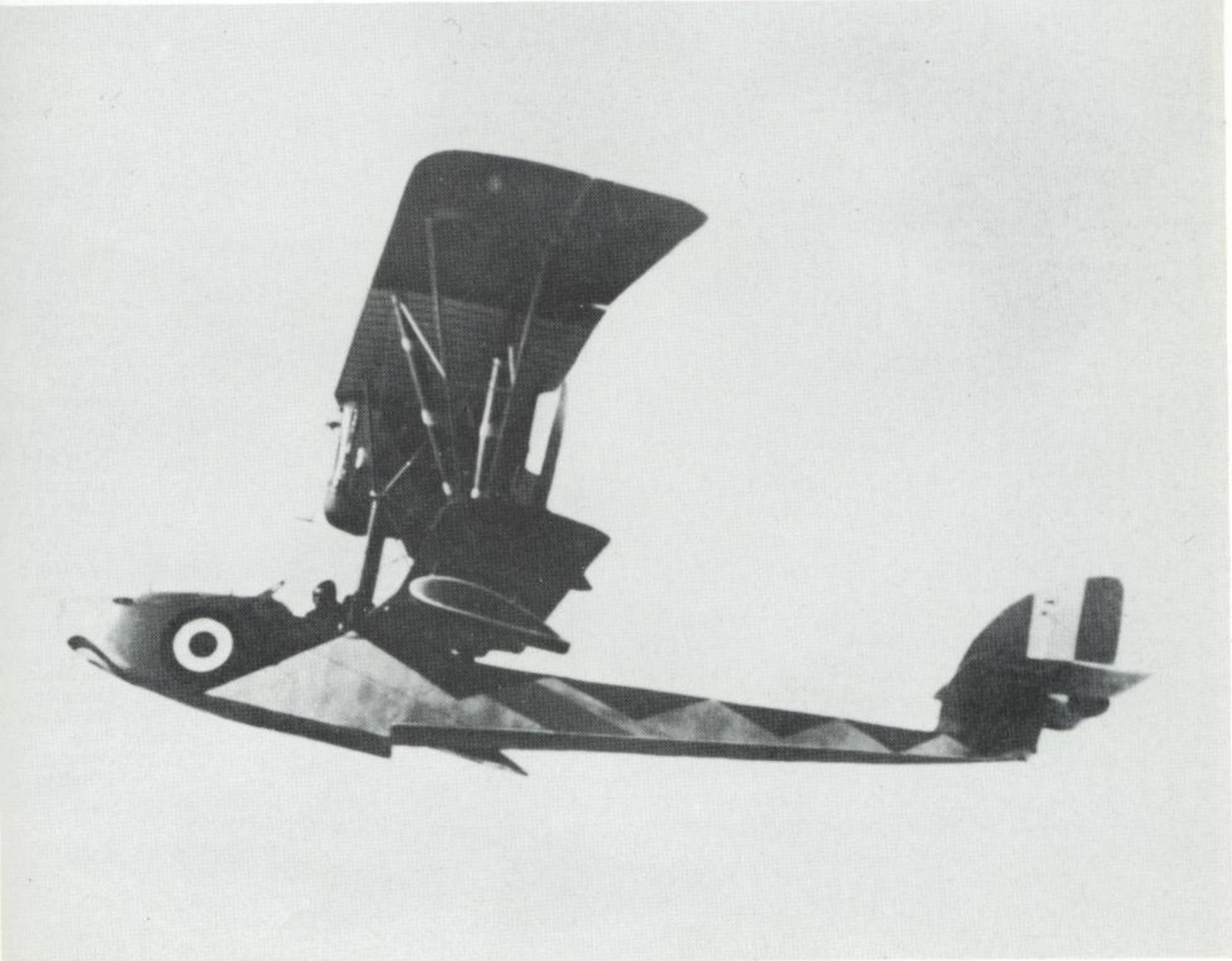

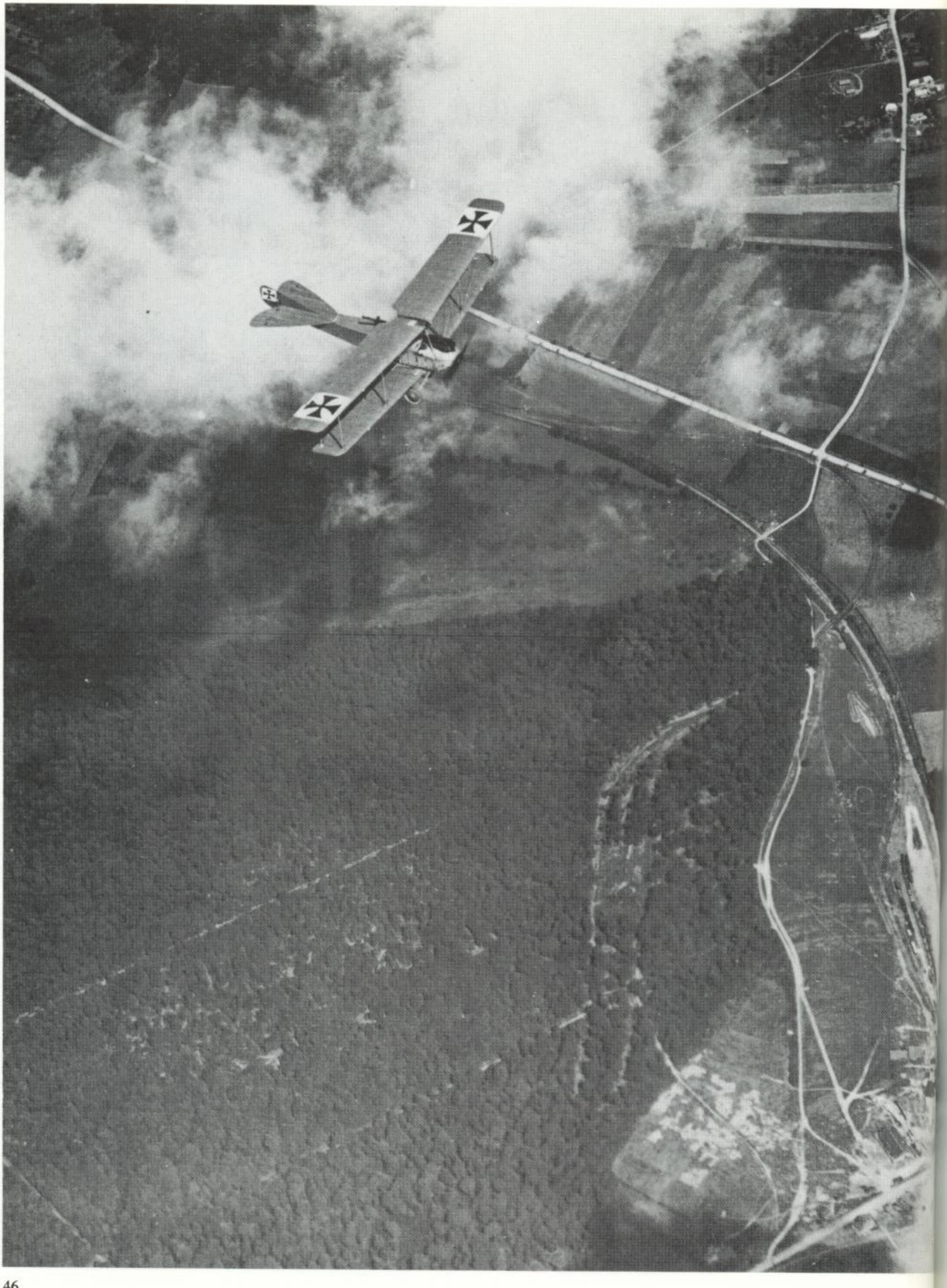

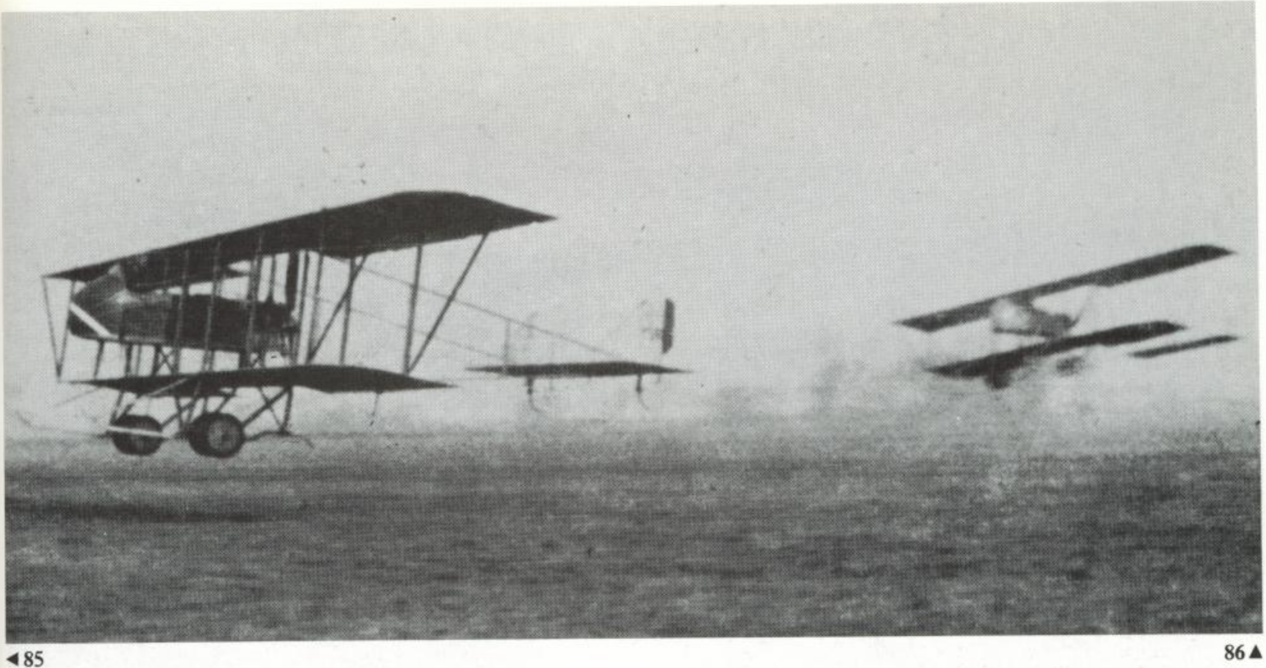

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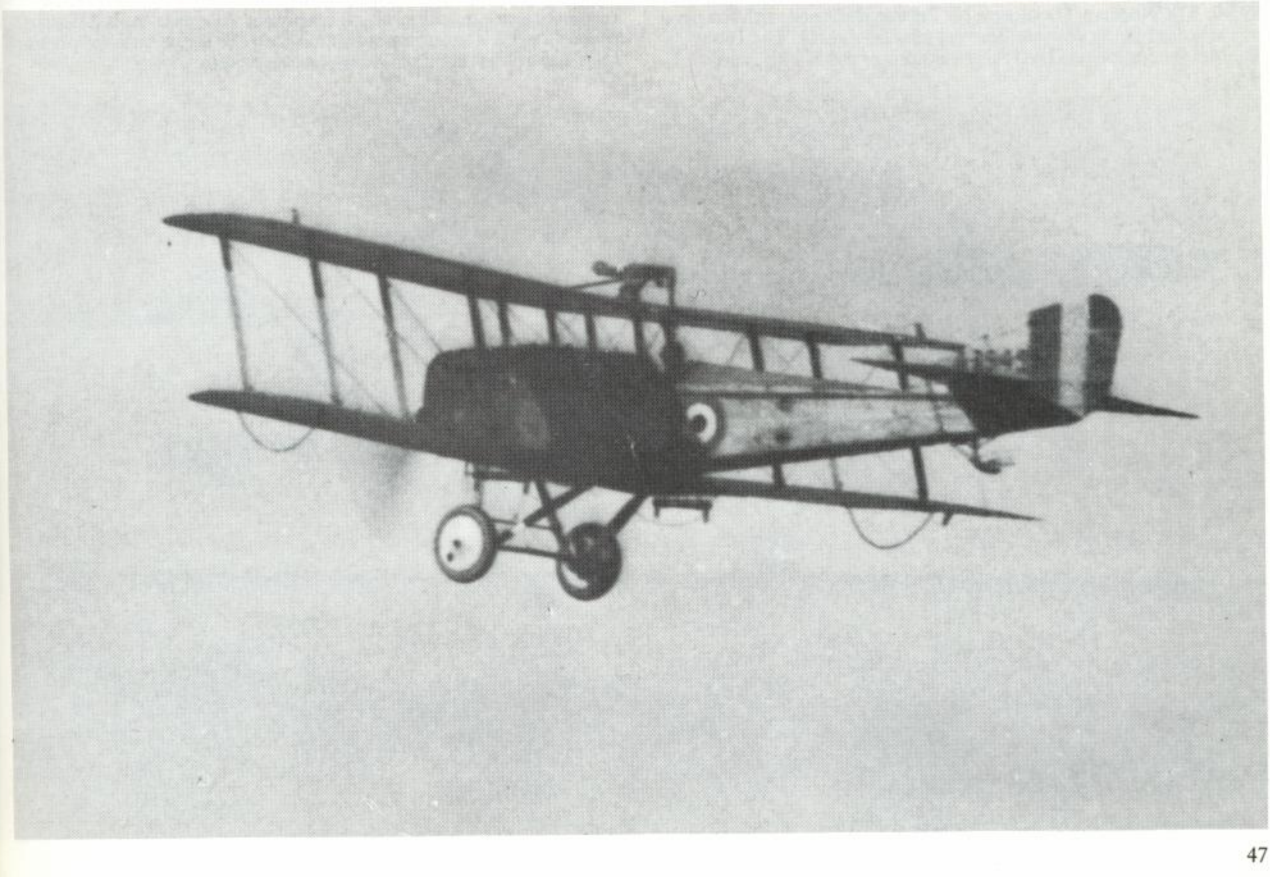
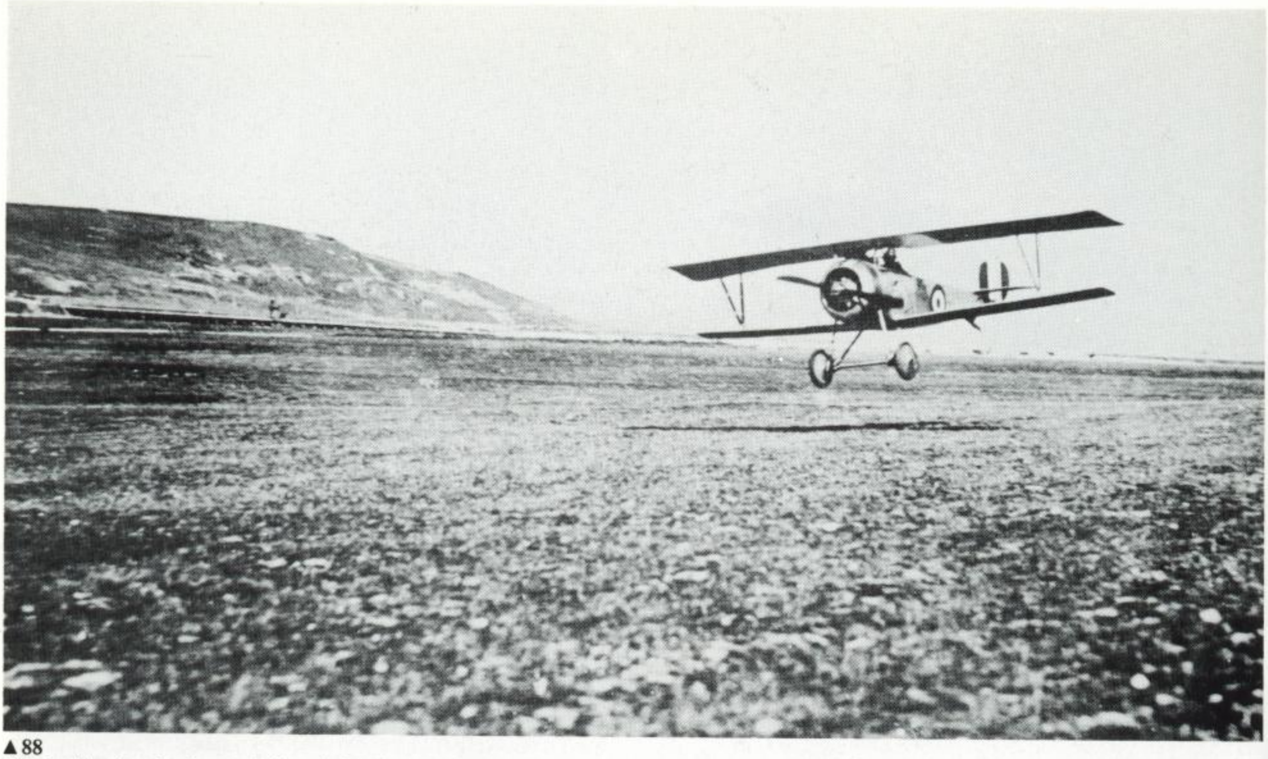
85. The LVG CII was among the early versions of a long line of successful two-seater biplanes built by the Luft-Verkhers Gesellschaft (Air Transport Company). It was widely used in 1916, and some were also built under licence by both Ago and Otto.

86. One of the best-known training machines of the war was the Maurice Farman Série 11, which was virtually an MF7 with the forward elevator and support booms deleted. Quickly dubbed the 'Shorthorn' the Farman was a viceless, stable machine, ideal for training. Shorthorns in Canadian service are illustrated.

87. The Martinsyde G100 'Elephant' was designed in 1915 as a high-speed scout. Although it had a good performance, its large size denied it the degree of manoeuvrability necessary for a fighting role. As a single-seat bomber the Elephant gave good service, but No. 27 was the only RFC squadron to be entirely equipped with the type.

87▼





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88. Coming into land at an Italian airfield is this Macchi Nieuport 17. The French-designed Nieuport 17 was one of the most widely used fighters of the war and the favourite mount of numerous Allied aces. The design of the Nieuport sesquiplanes was extensively copied by the Germans.

89,90. The Norman Thompson NT2B was designed with the need of a standard flying boat trainer very much in mind. The 160hp Beardmore engine powered early versions of the NT2B, while 200hp Hispano and Sunbeam Arab motors became the standard powerplants in 1918; from June that year, owing to problems with the Hispano, Arabs were used exclusively.

91. Oesterreichische Flugzeugfabrik AG of Wiener Neustadt, more commonly known as Oeffag, produced its first design in 1915, a reconnaissance machine which resembled Austrian-built Albatros types. The CI went into production with the series number prefix '51', and at least eighteen examples were built.

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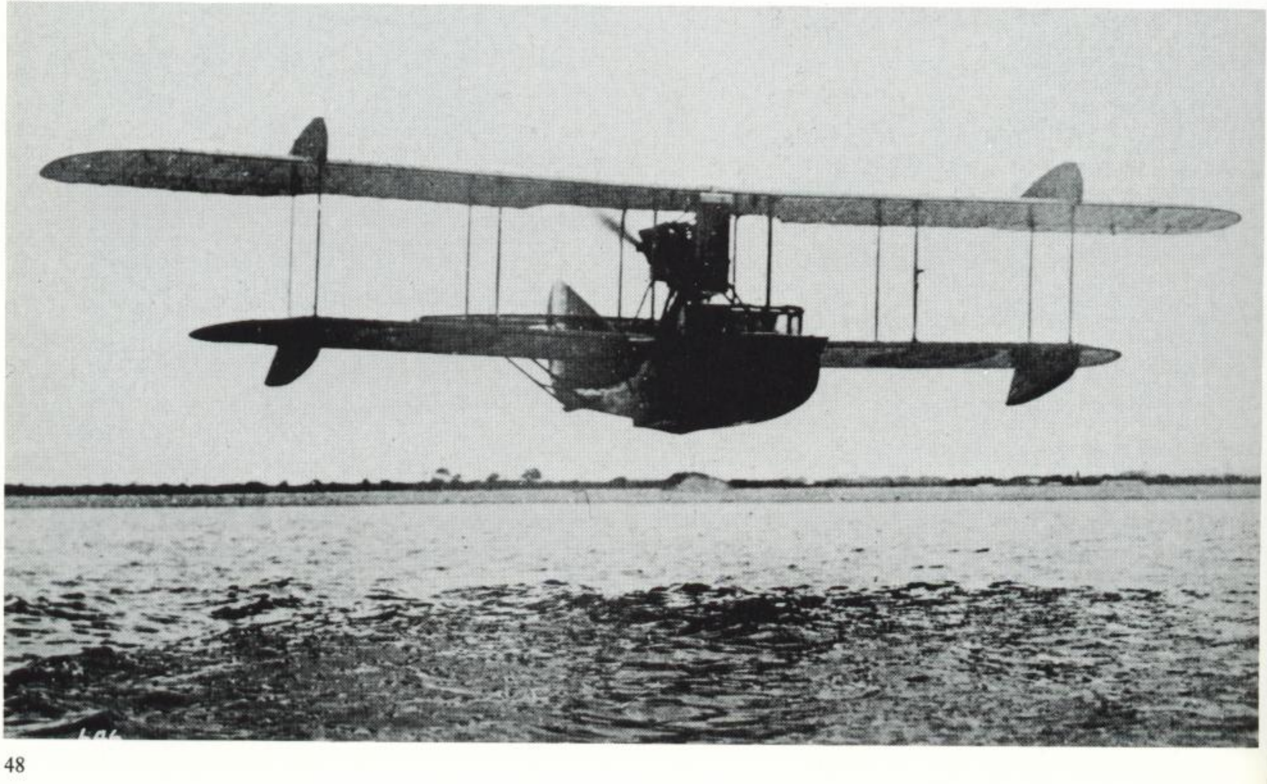

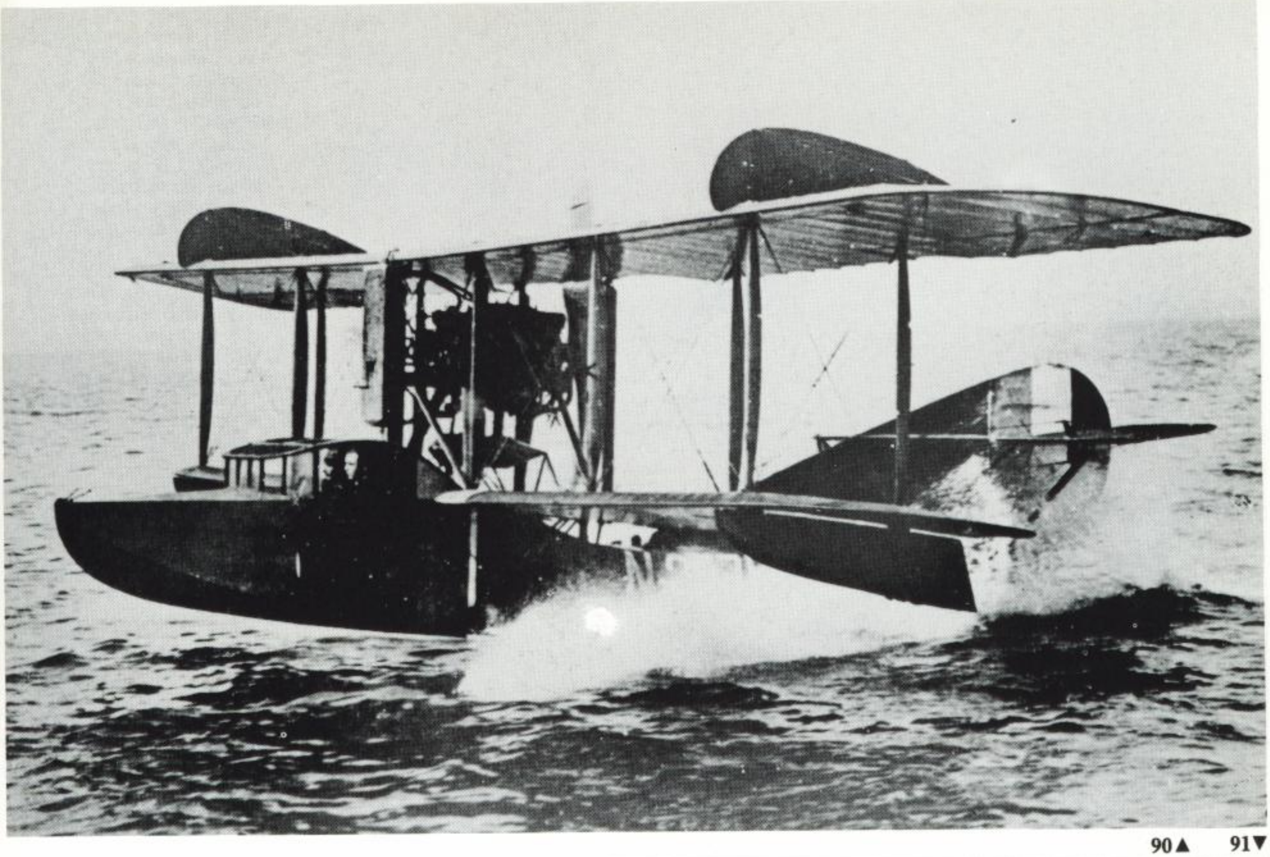

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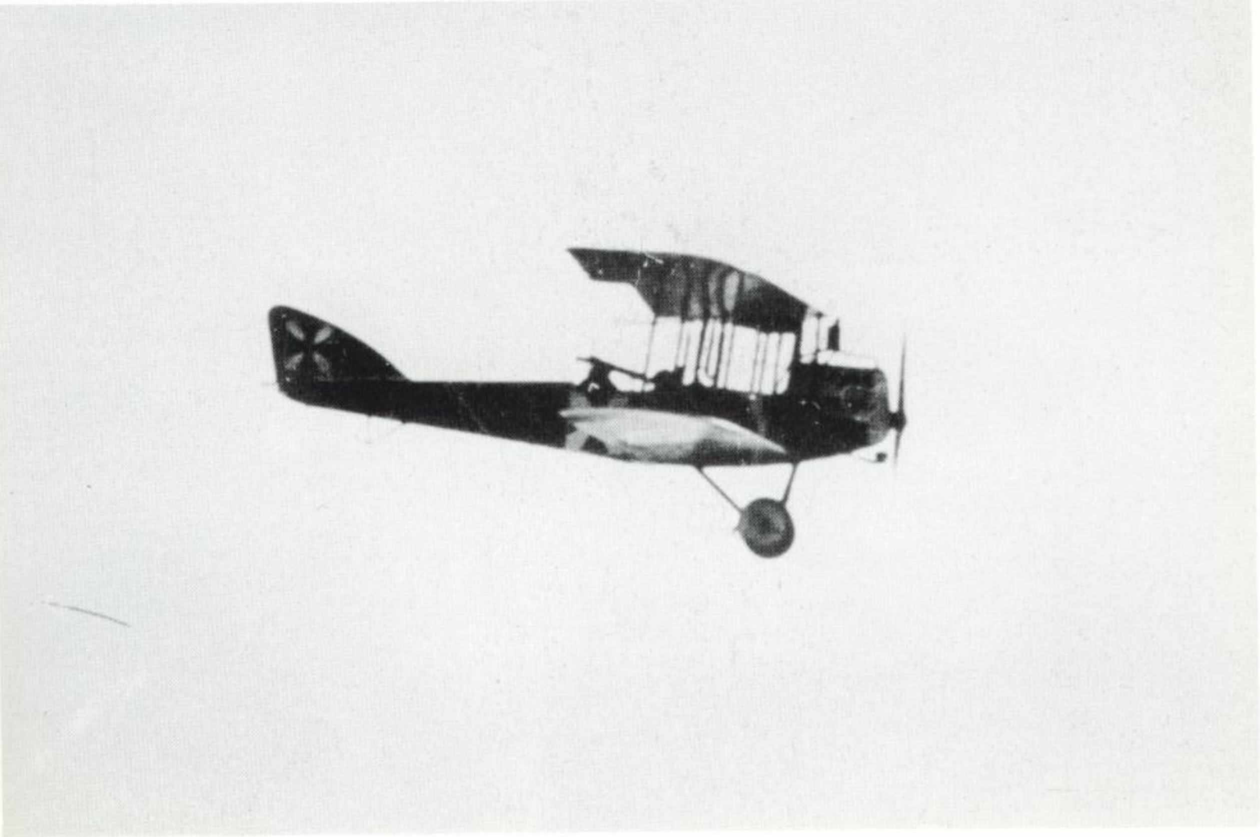

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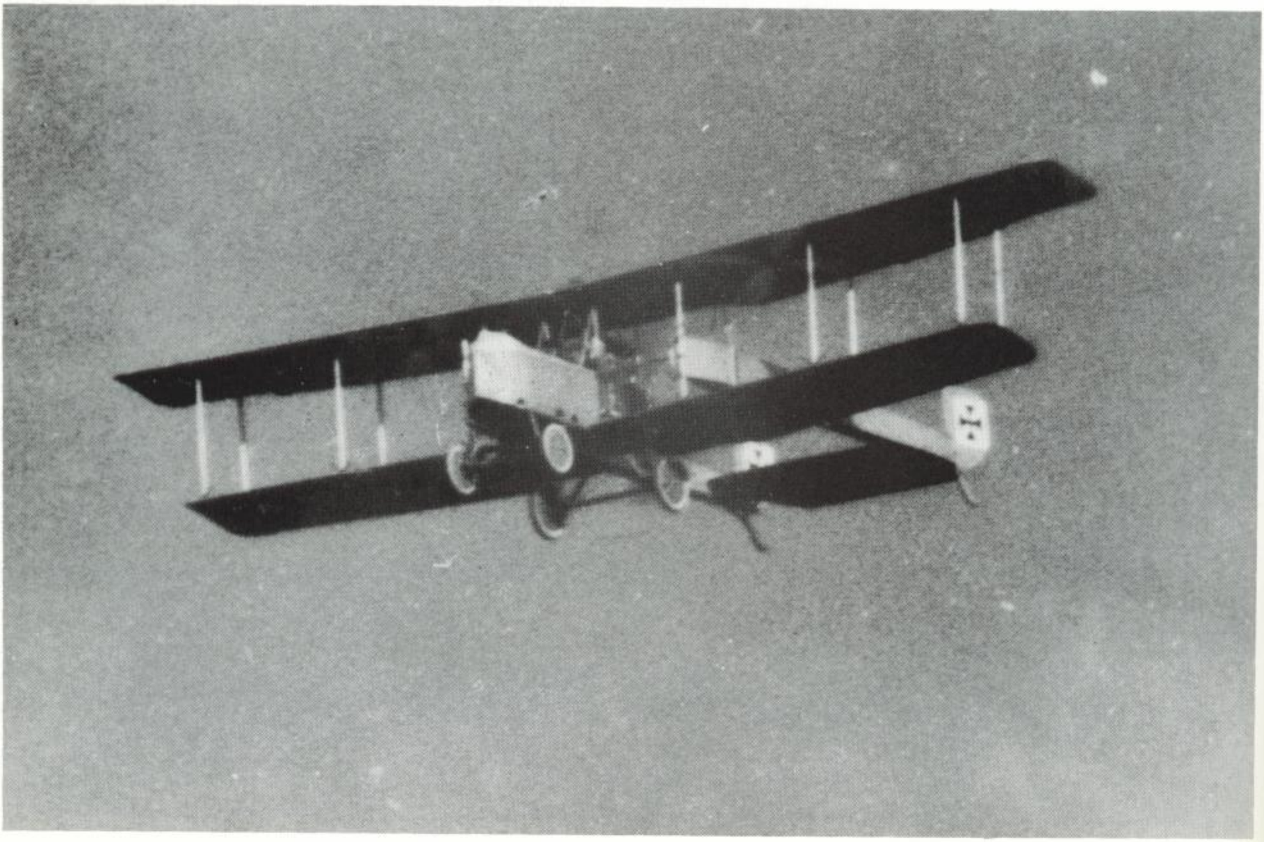
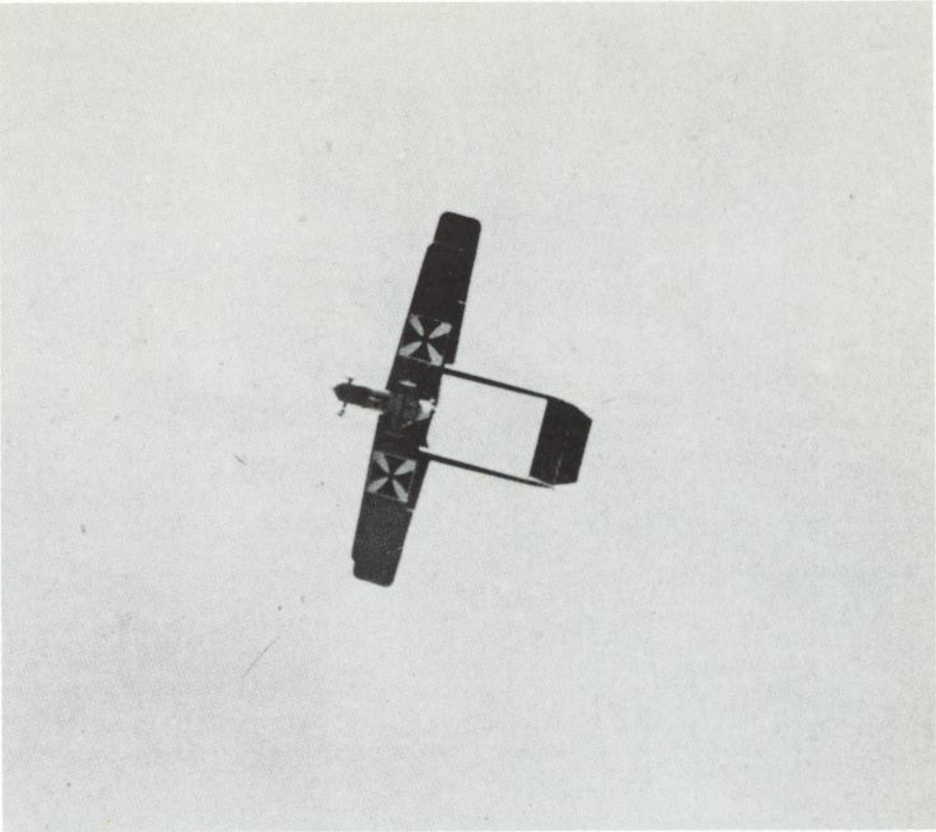


92. This interesting view of the Oeffag CI emphasizes the pronounced sweepback of its wings. Depite its attractive lines, the CI was not a great success, and the type was soon relegated to training duties. Apart from the CII of 1917, Oeffag's wartime effort was concentrated on building Albatros fighters in large numbers.

93,94. A considerable number of Otto machines were produced prior to the war, but Gustav Otto, dogged by ill health, undertook little work after 1914 other than building LVGs under licence. His Munich-based company was liquidated in 1916, having produced only a few wartime prototypes. Among them was the curious twin-boom Otto CI, of which little is known.

95. The series of monoplanes built by Pfalz during 1915 was based on the successful prewar designs by Morane Saulnier. Illustrated is the Pfalz EIV, which was powered by the twin-row 160p Oberursel UIII rotary engine. Only 24 examples of the EIV were produced and the type was not particularly successful.



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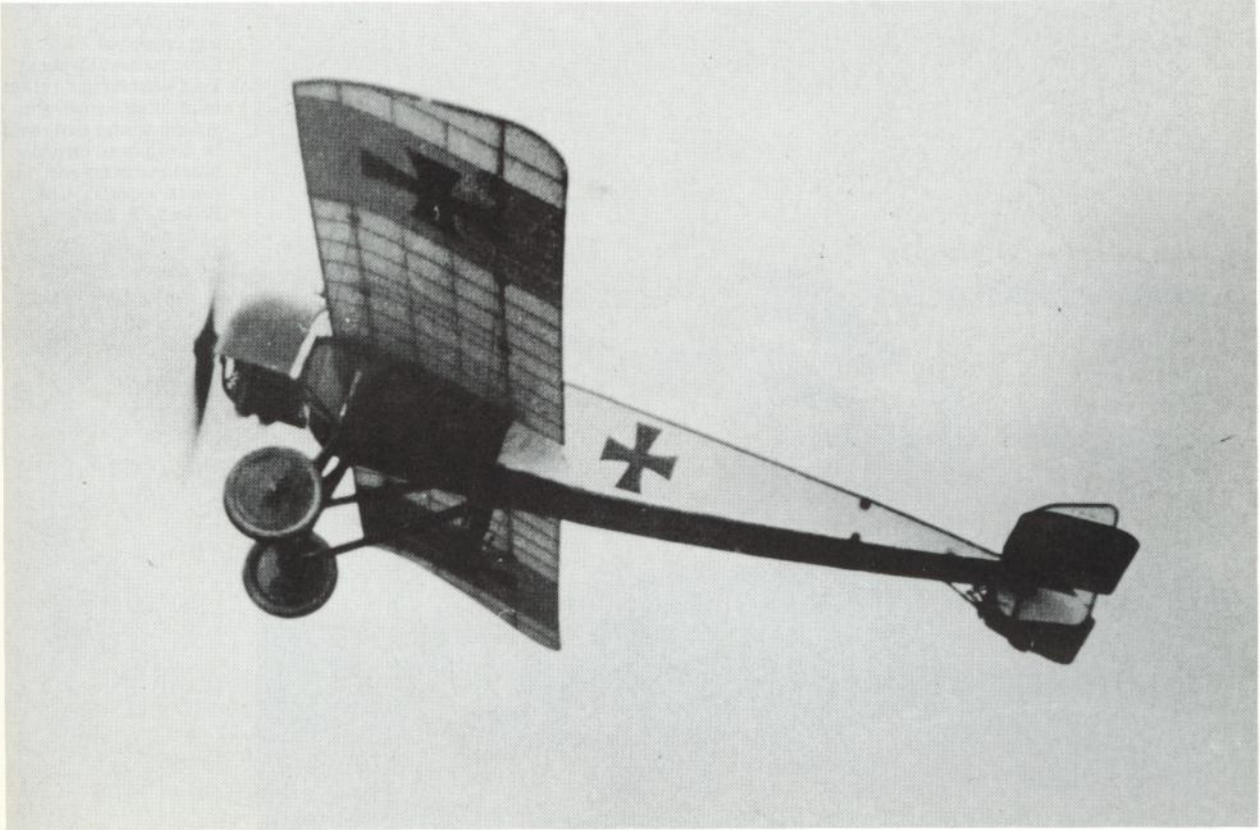

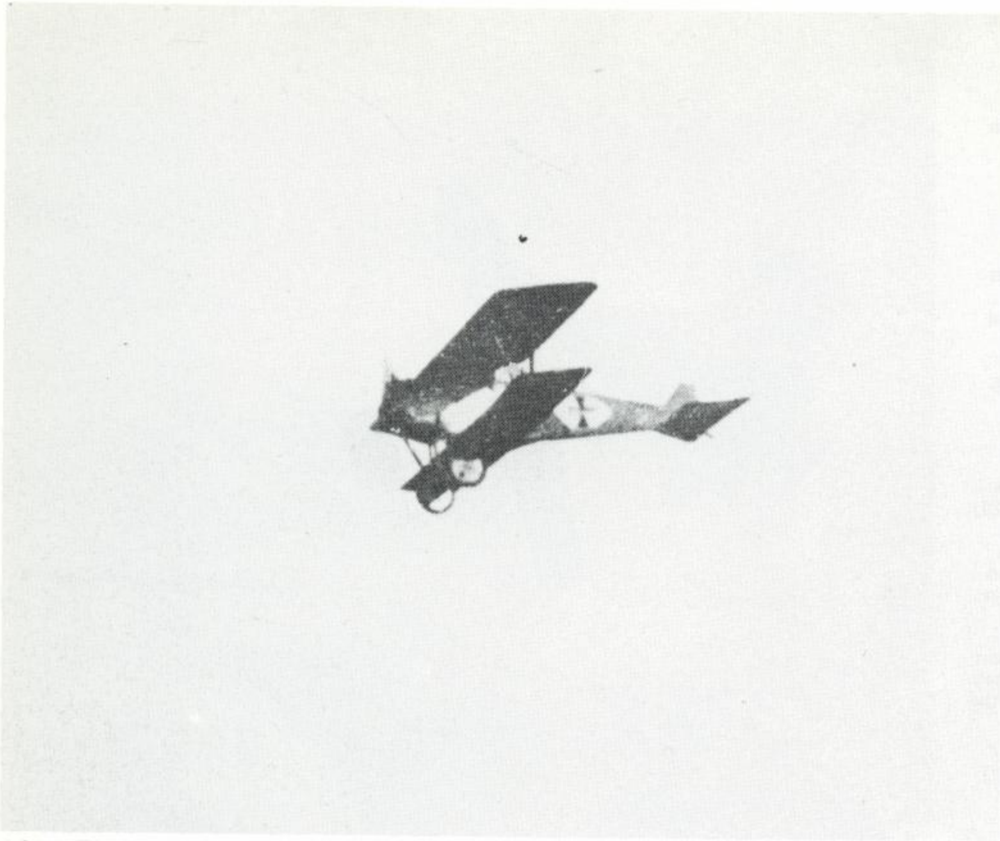

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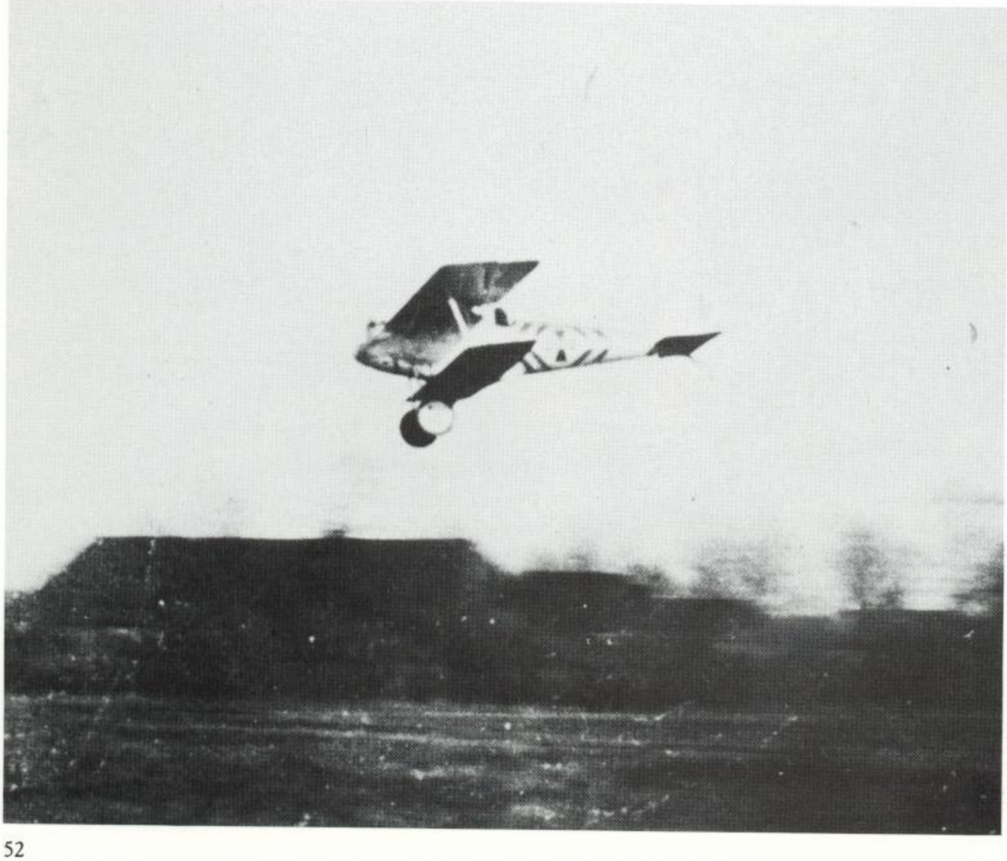
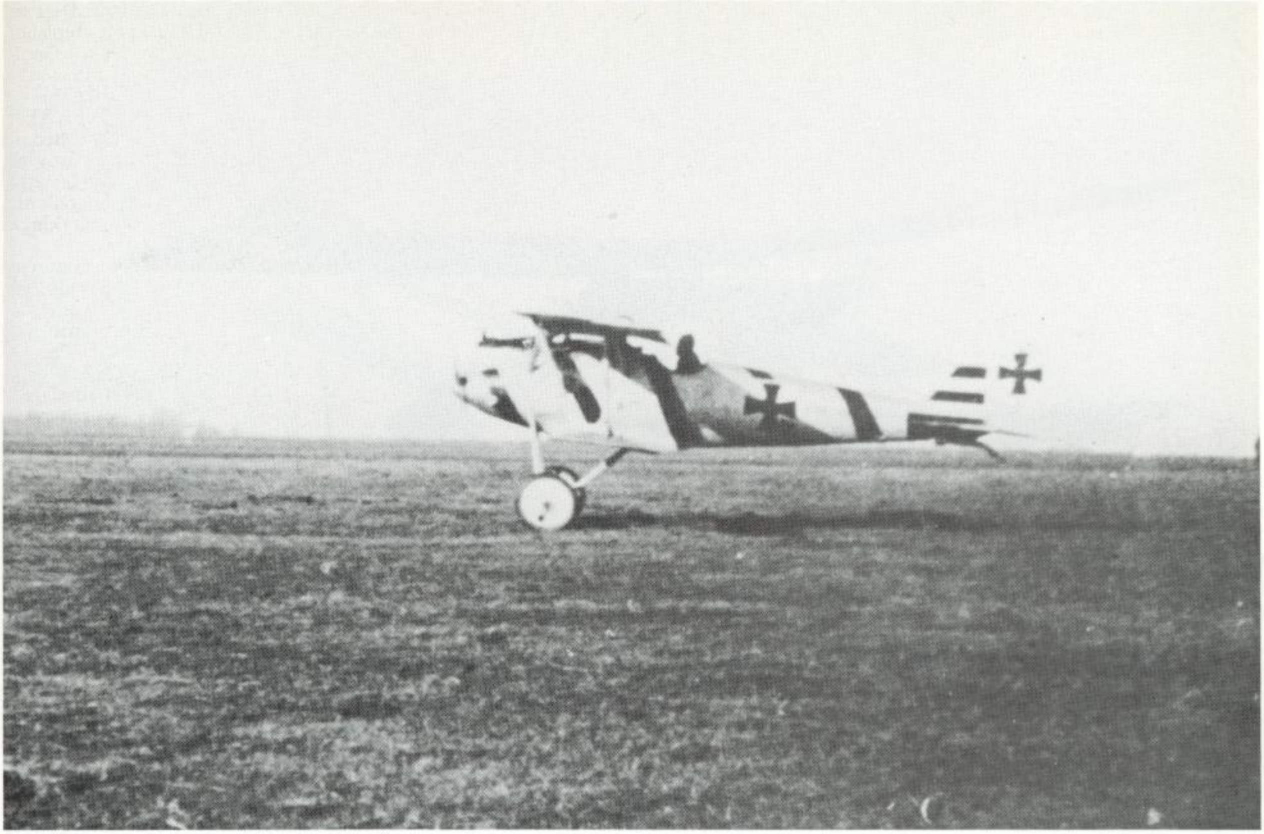


96. The Pfalz DIII and DIIIa fighter biplanes equipped many German units, either in whole or in part, during the autumn of 1917. The machine illustrated is a DIIIa, with large-area tailplane, and belonged to *Jasta 22*; details of colours and markings are not known.

97. *Leutnant* Wunsch of *Jasta 22* lands his Pfalz DIII on Viviase aerodrome, circa autumn 1917. The double chevrons flanking the fuselage cross were black over the basic overall silver-grey finish in which most Pfalz fighters left their factory.

98. Racing down the runway is this Pfalz DIIIa of *Jasta 4*. Some 600 DIII and DIIIa types were delivered, and no fewer than 350 were still in front-line service in August 1918. The machine illustrated has been decorated with black dope on its fuselage and tail surfaces.

99. The diminutive Port Victoria PV7 was designed in 1917 by W.H. Sayers and built by the RNAS Experimental Construction Depot at Port Victoria in an effort to produce a small anti-airship fighter that could be flown from torpedo boat destroyers and similar vessels. (J.M. Bruce/G.S. Leslie Collection)



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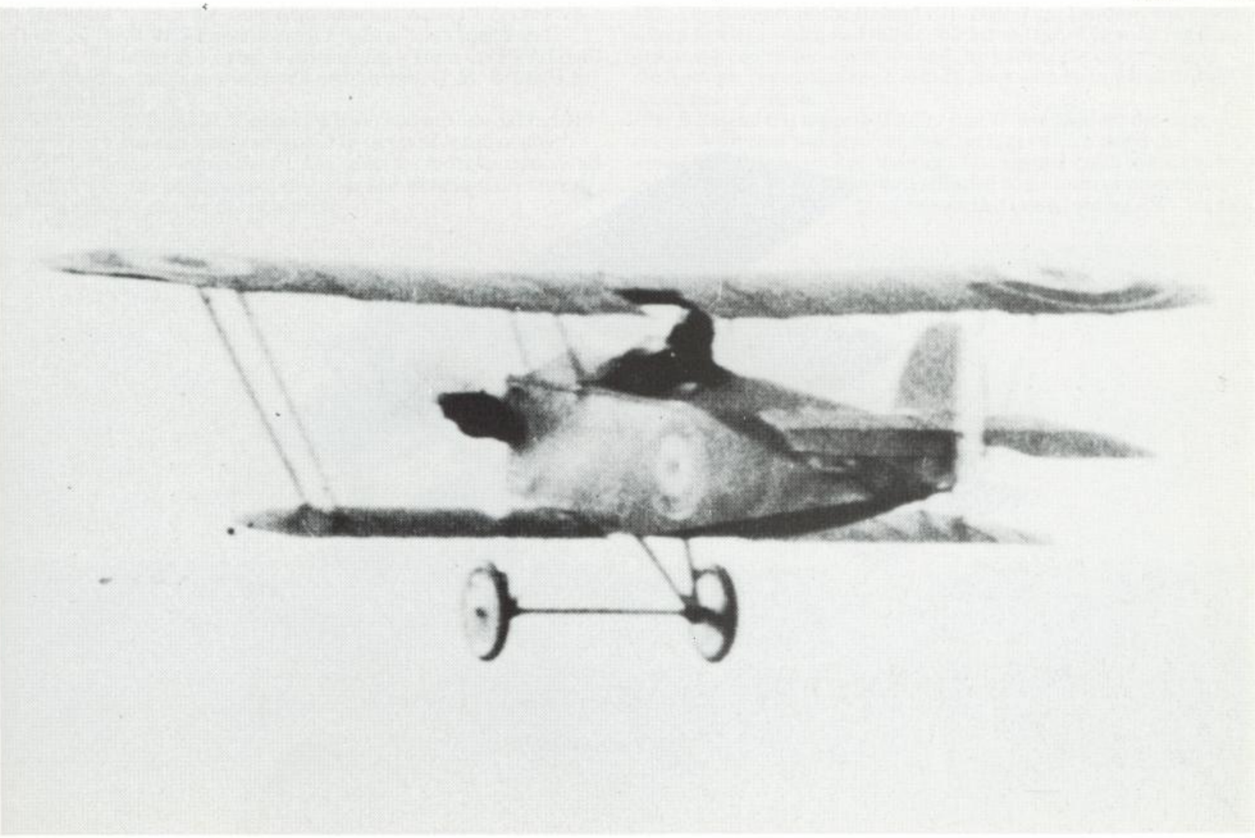

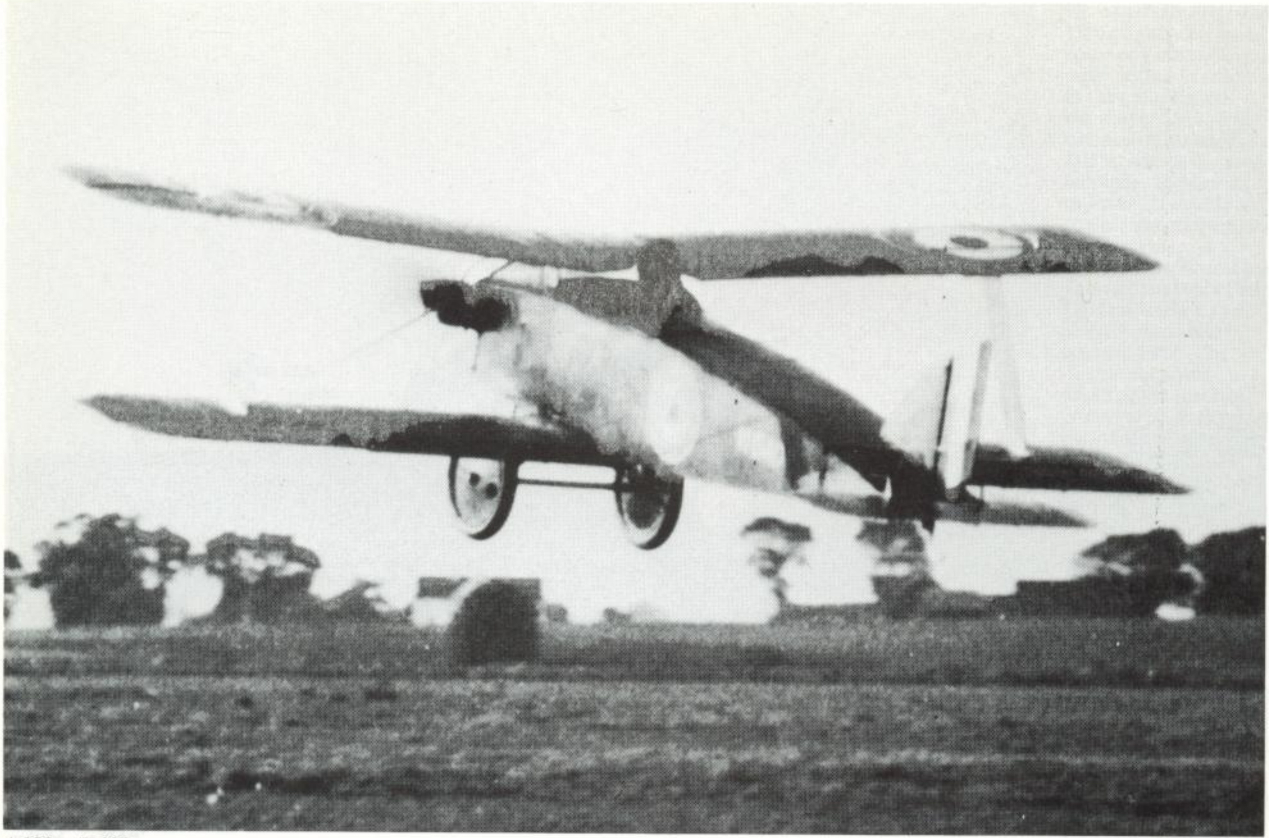

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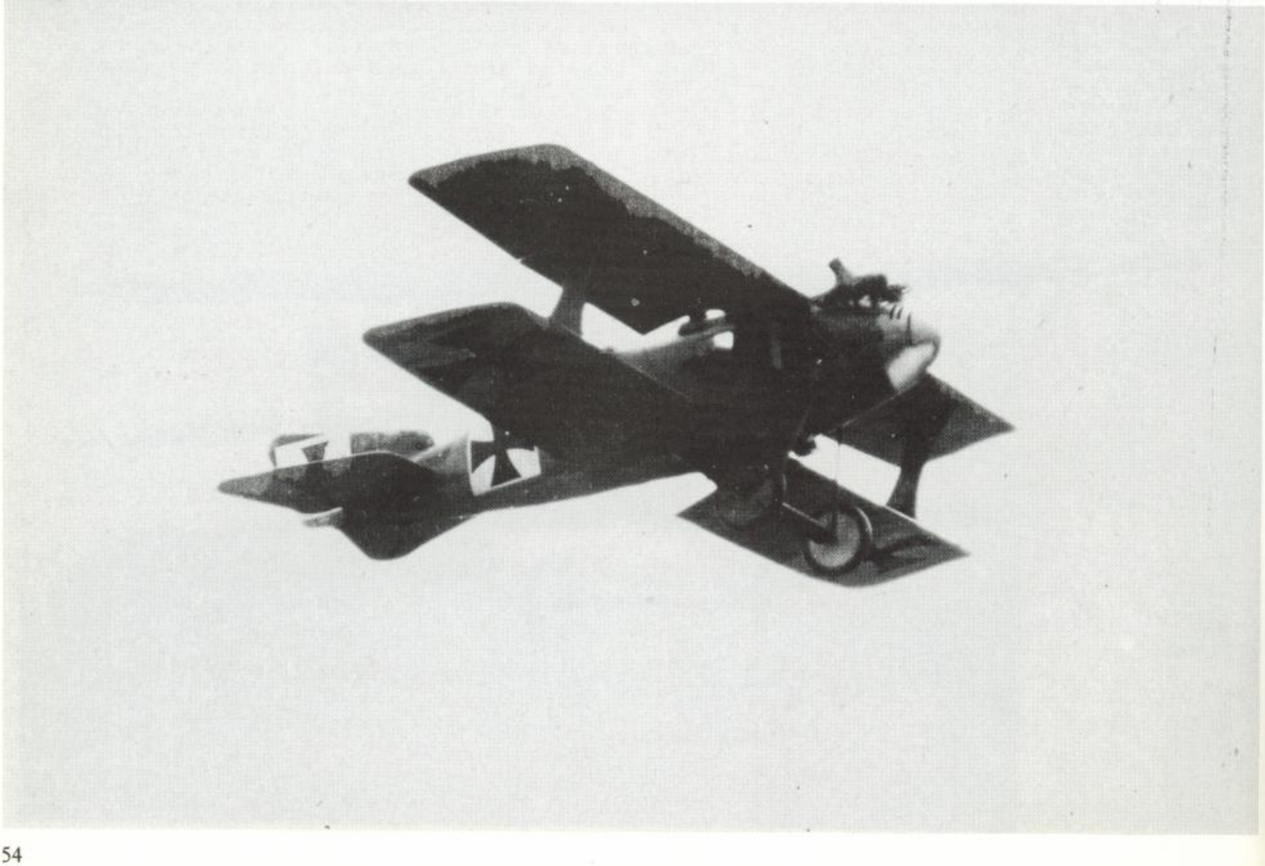

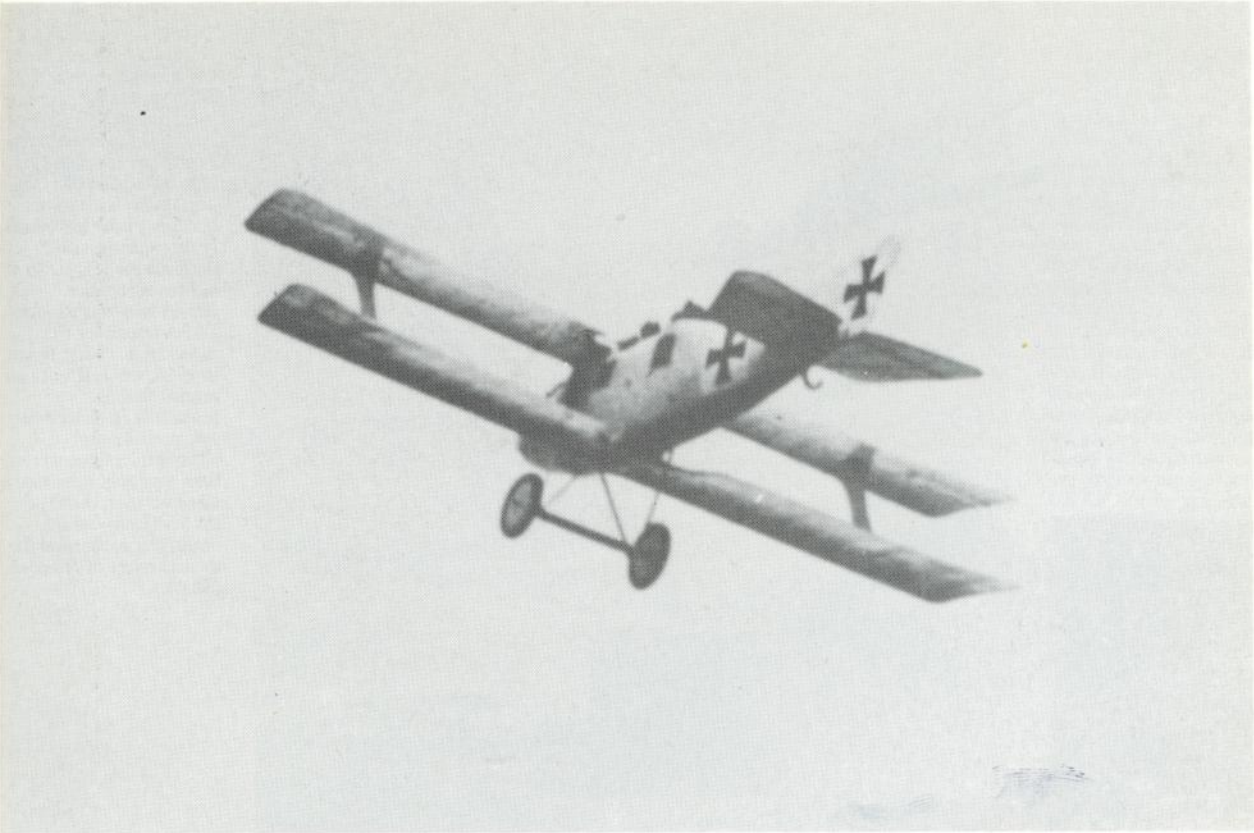

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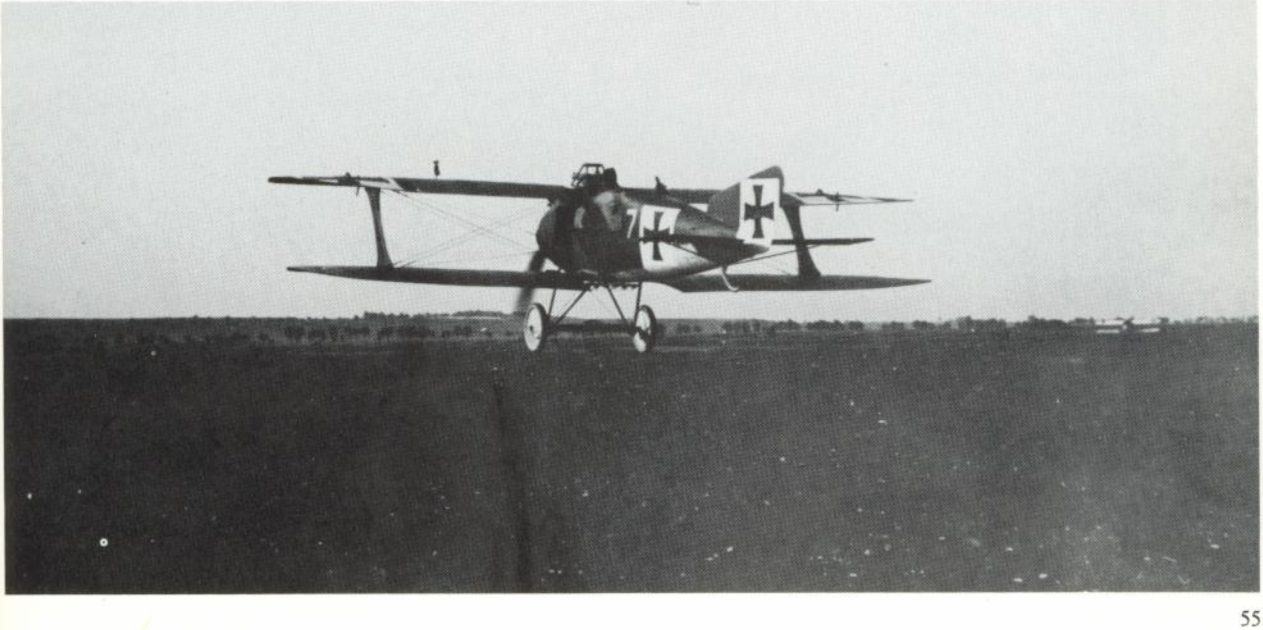
100. Designed to meet the same requirements as the PV7, the PV8 was built by the RNAS Experimental Flight at Eastchurch and named the 'Eastchurch Kitten' to distinguish it from the PV7 'Grain Kitten'. Neither machine was developed further. (J.M. Bruce/G.S. Leslie Collection)

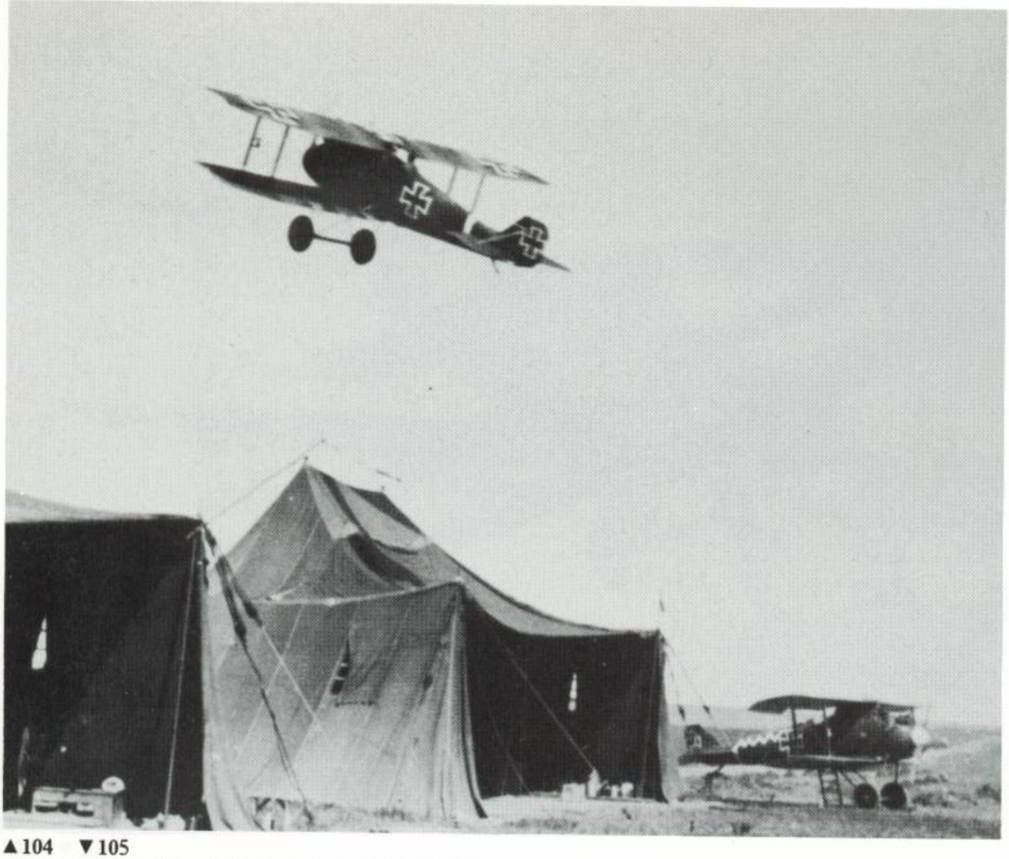
101. The LFG Roland CII *Walfisch* (Whale) was introduced in 1916 and for its day was extremely advanced in terms of aerodynamic design. CIIs began to equip the *Fl.Abt.* units for reconnaissance and escort duties by the beginning of that year and were initially armed only with a single gun for the observer.

102. The designer of the Roland CII, *Dipl. Ing.* Tantzen, employed a deep fuselage which had the double advantage of eliminating drag-producing centre-section struts and, by joining the upper wing to the fuselage, presenting the Roland's crew with an unparalleled all-round field of vision.

103. A Roland CII takes to the air. Just visible here are the large celluloid-covered panels in the fuselage sides which aided the illumination of the cockpit interior. The angular crash pylon above the forward-firing machine-gun afforded some form of protection for the crew in the event of an overturned crash landing. (W. Schulz)

103▼





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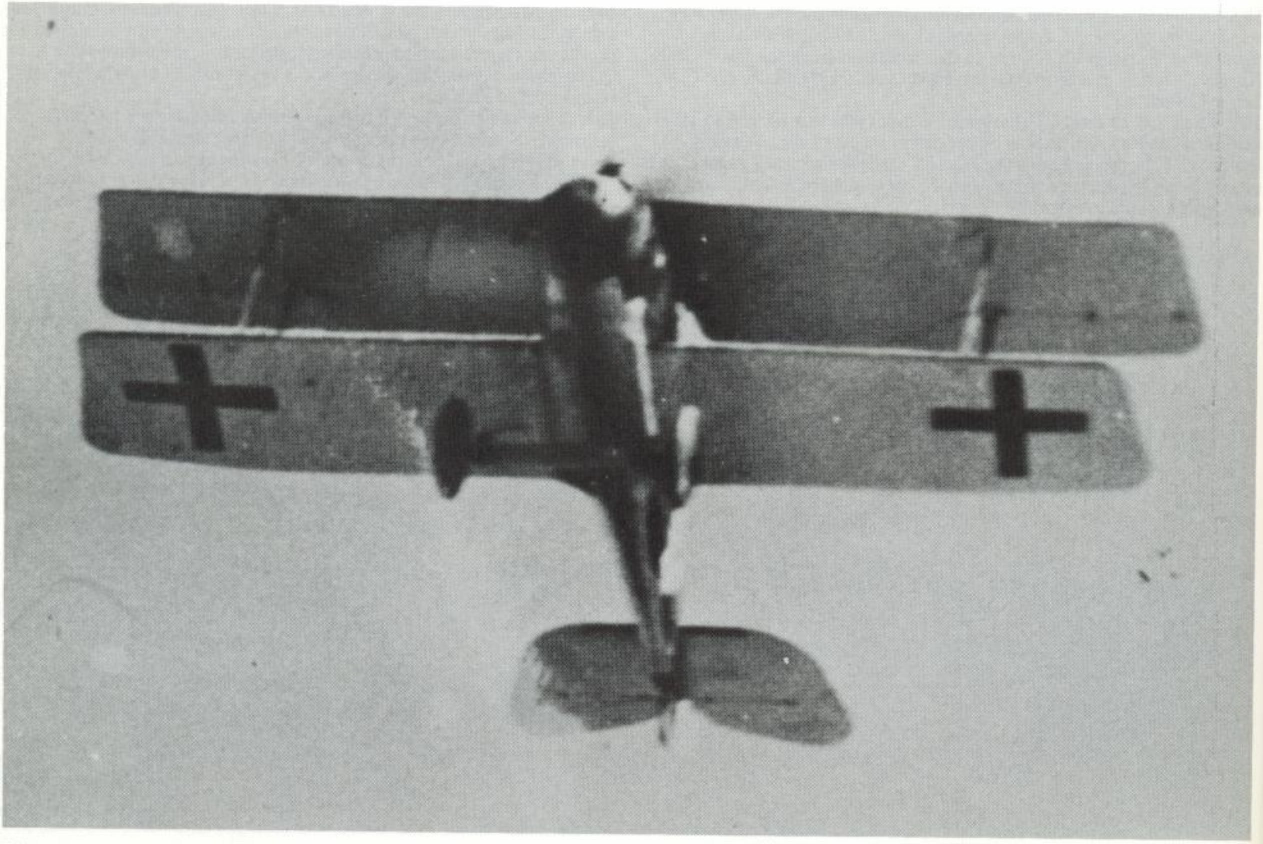
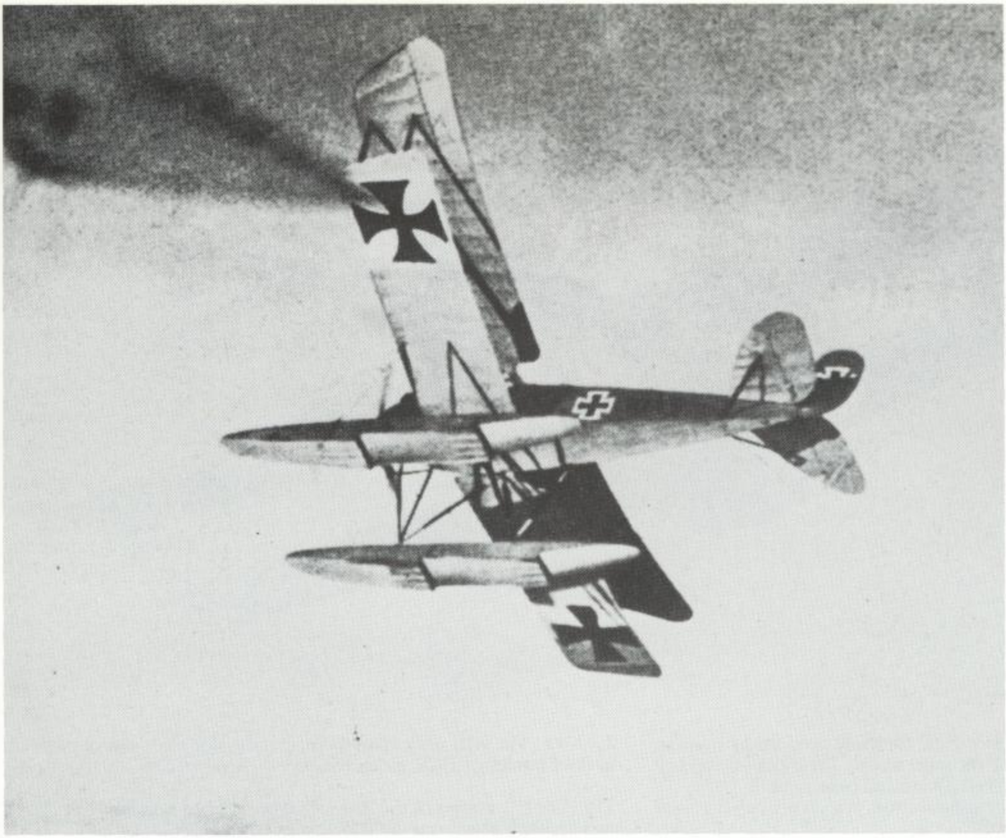


104. The LFG Roland DIIa fighter was based closely on the successful CII which preceded it. The type did not form the complete complement of any front-line unit and, although quite fast, was unpopular with pilots because of the heaviness of its controls – an undesirable feature in a fighter aeroplane.

105. A late-war Roland DII drones over the cameraman. First flown in 1916, the DII bore an unmistakable resemblance to its two-seat predecessor although its lines were finer and generally much slimmer than those of the *Walfisch* – which doubtless accounted for its nickname of *Haifisch* (Shark).



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106. One of the most attractive single-seat seaplane fighters of the war was the Rumpler 6B5, which was used for seaplane station defence duties. The 6B5 was almost identical to the 6B1 version and differed only in the profile of its tailplane, clearly illustrated here.

107. The rugged Salmson 2A2 was used extensively by the American Expeditionary Force in the First World War. Illustrated is Salmson S464 of the 1st Aero Squadron, with red and white unit markings plainly visible on the port upper wing surface. (US Air Force via C.A. Owers)

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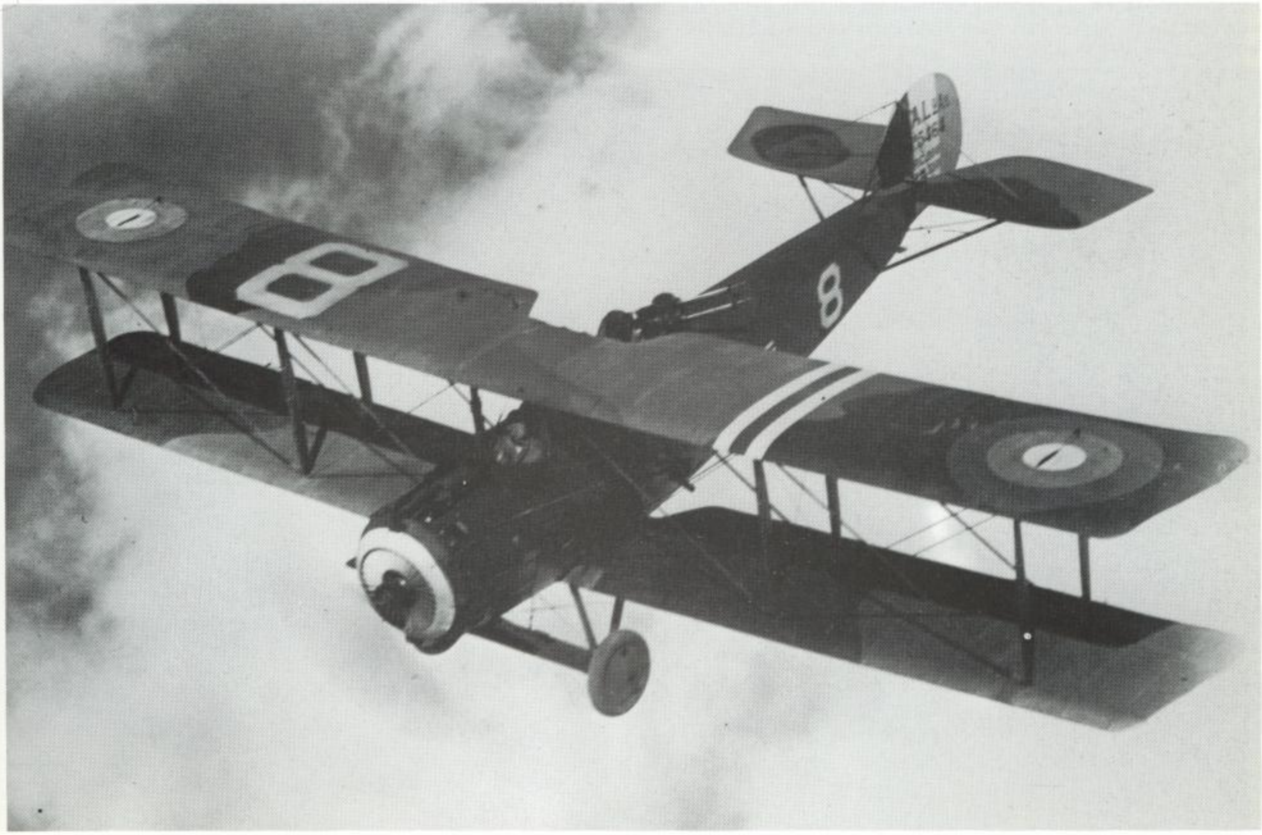

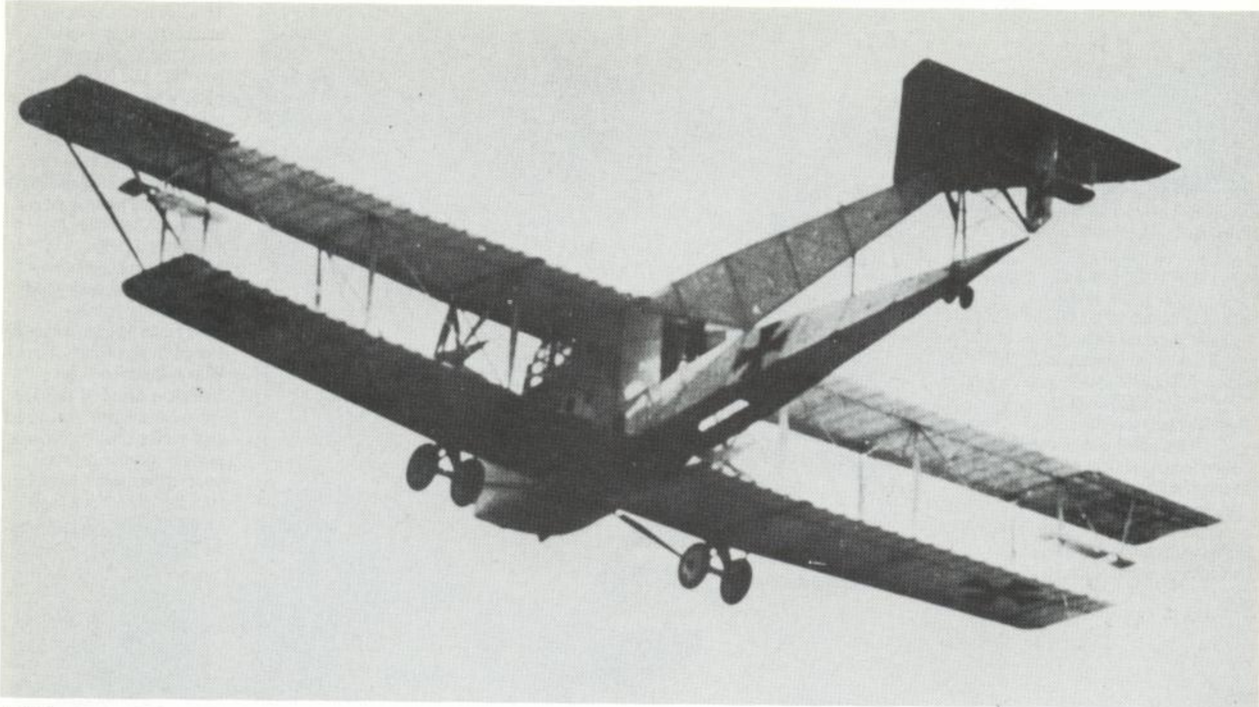

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108. The Siemens Schuckert electrical combine produced a number of interesting machines during the war, among the more unusual of which was the RIII bomber. Well illustrated here is its unconventional twin-fuselage configuration, which provided a clear field of fire for the rear gunner.

109. Siemens Schuckert RVI 6/15 was one of the most successful of the SSW 'R Planes'. The photograph was taken on 25 April 1916, when 6/15 made a record six-hour flight carrying a useful load of 2,400kg. The RVI undertook bombing missions but was damaged in the summer of 1917 and subsequently scrapped. (Courtesy P.M. Grosz)

110. The tributaries of the River Ore provide an evocative backdrop to a Sopwith Pup from the RFC's Experimental Station at Orfordness being flown by Capt. Vernon Brown. The Pup was a delightful aeroplane and inspired genuine affection in all those who flew it.

▼109

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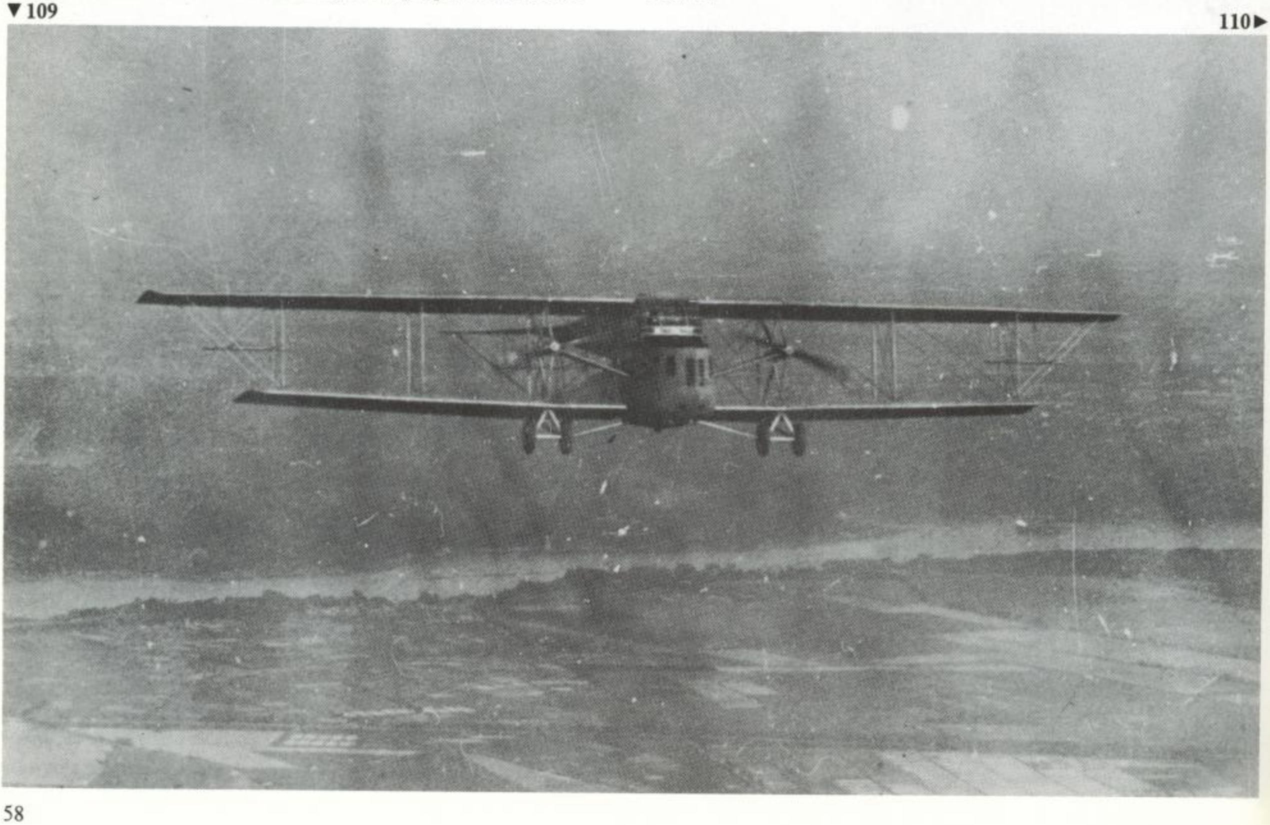

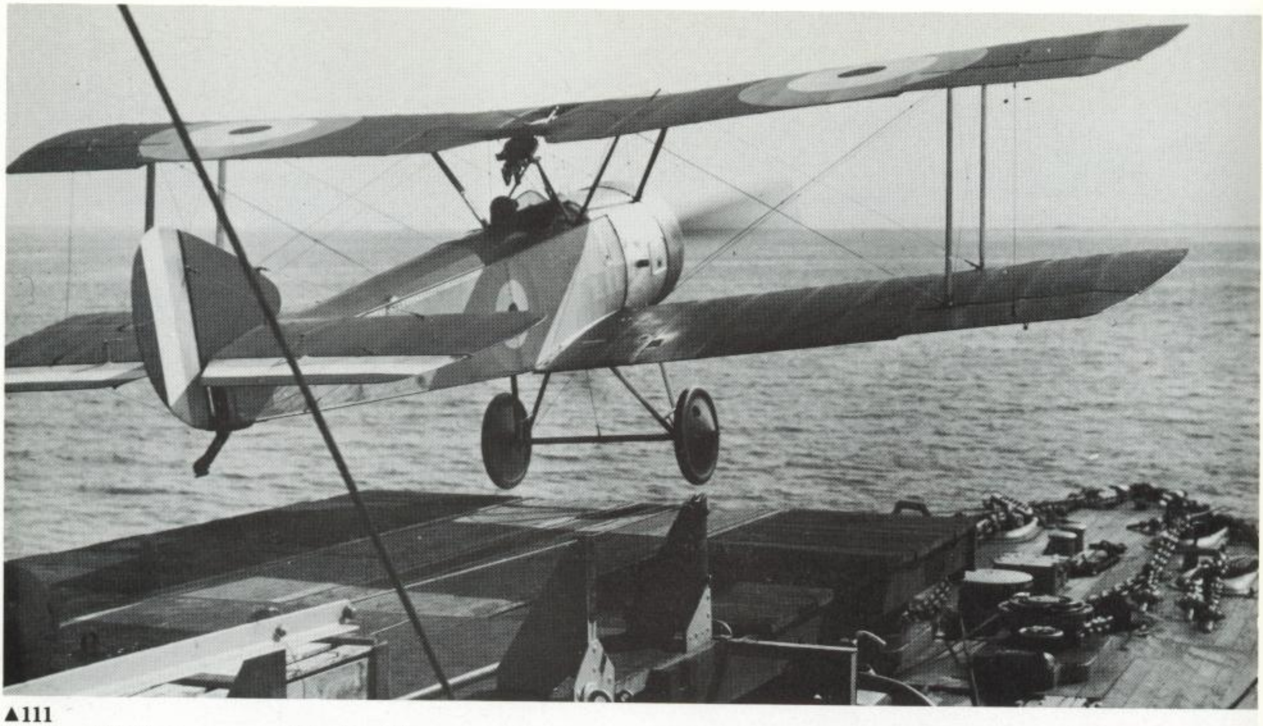

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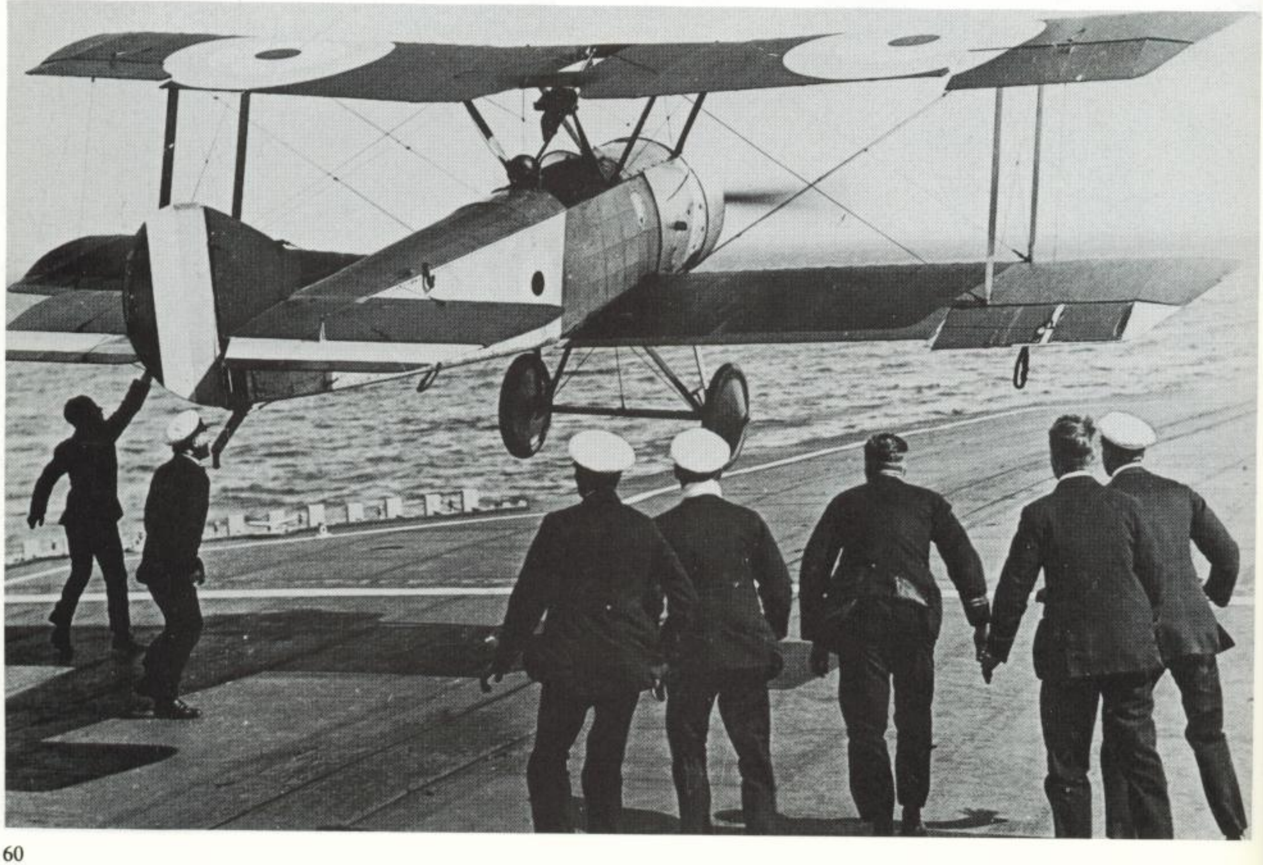
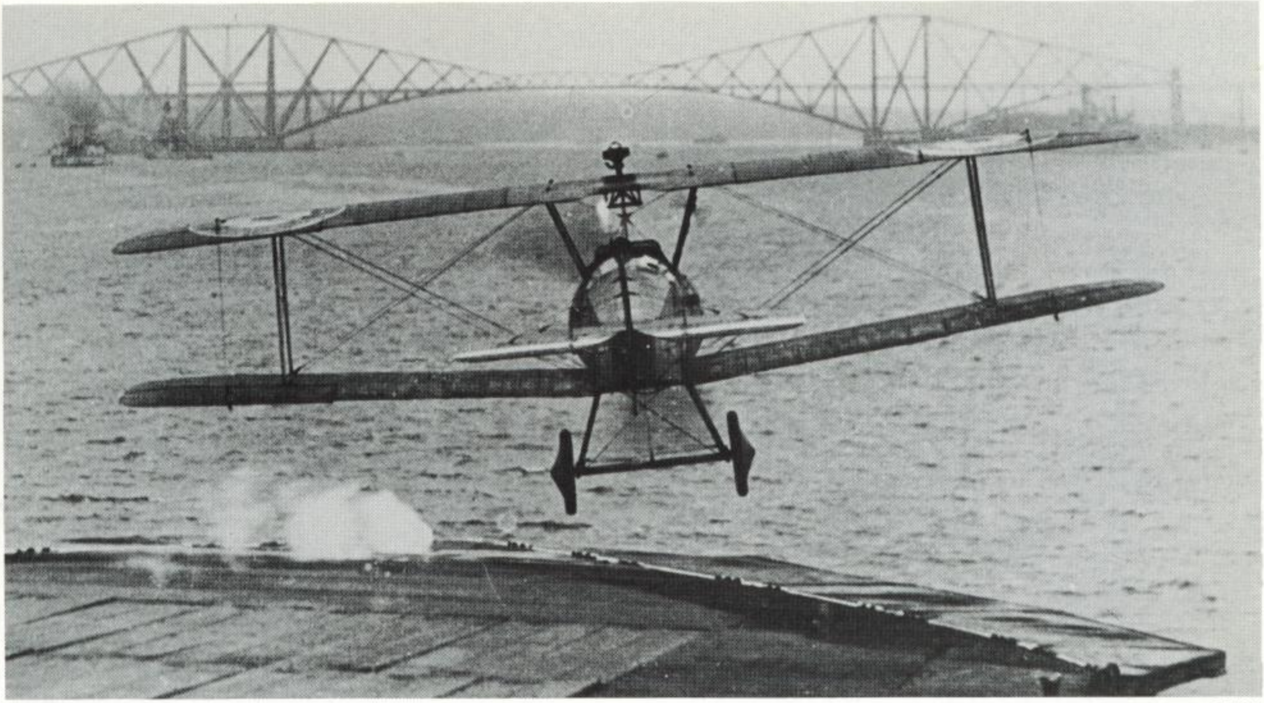
111. Sqn. Cdr. Rutland successfully lifts off from a special platform mounted aboard HMS *Yarmouth* in June 1917. Orders despatched on 17 August specified that each light cruiser squadron would have one of its vessels fitted with a 'flying-off platform' for anti-airship use.

▼112

112. A famous First World War photograph. Sqn. Cdr. E.H. Dunning attempts to land on the deck of HMS *Furious* at a speed little faster than that of the carrier. Naval officers prepare to secure the Pup by grabbing handling strops fitted to the machine's wings and fuselage.





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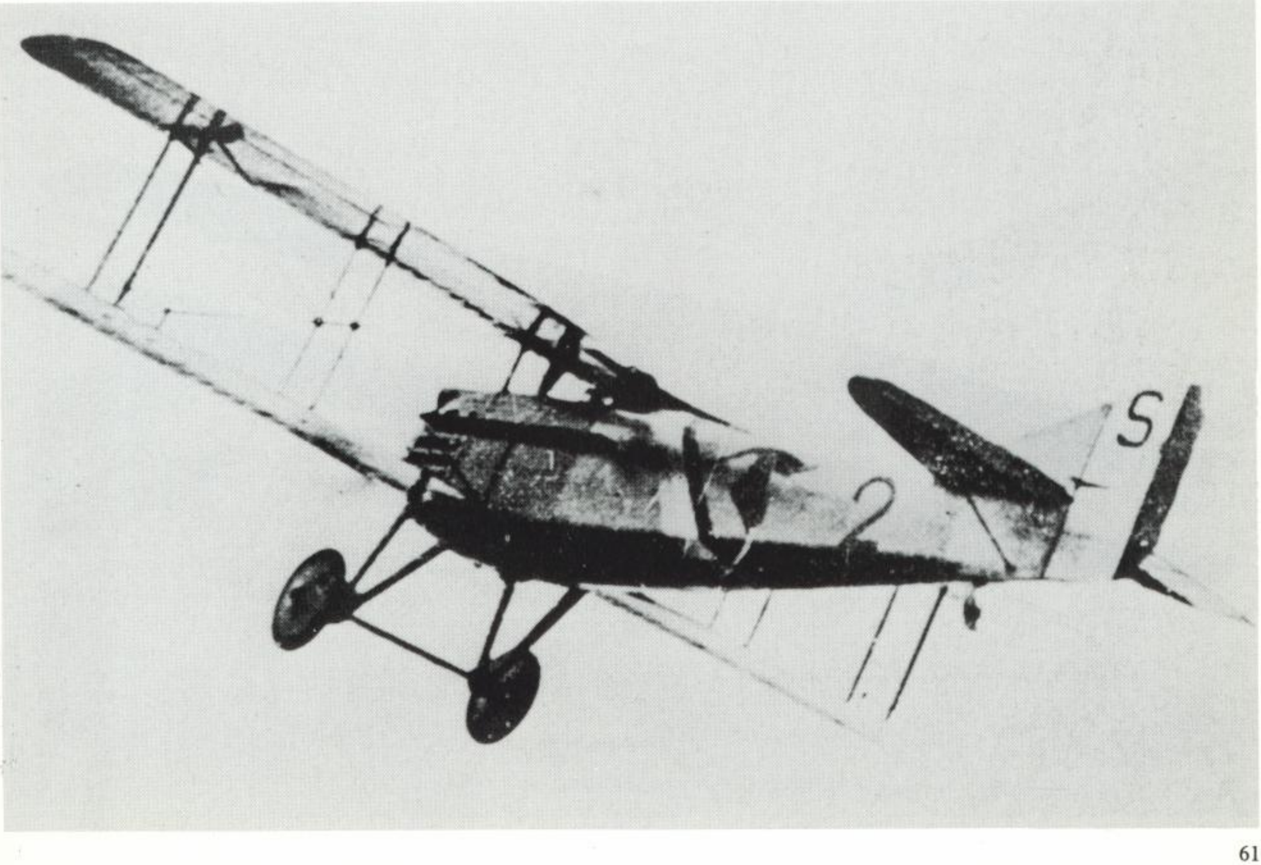
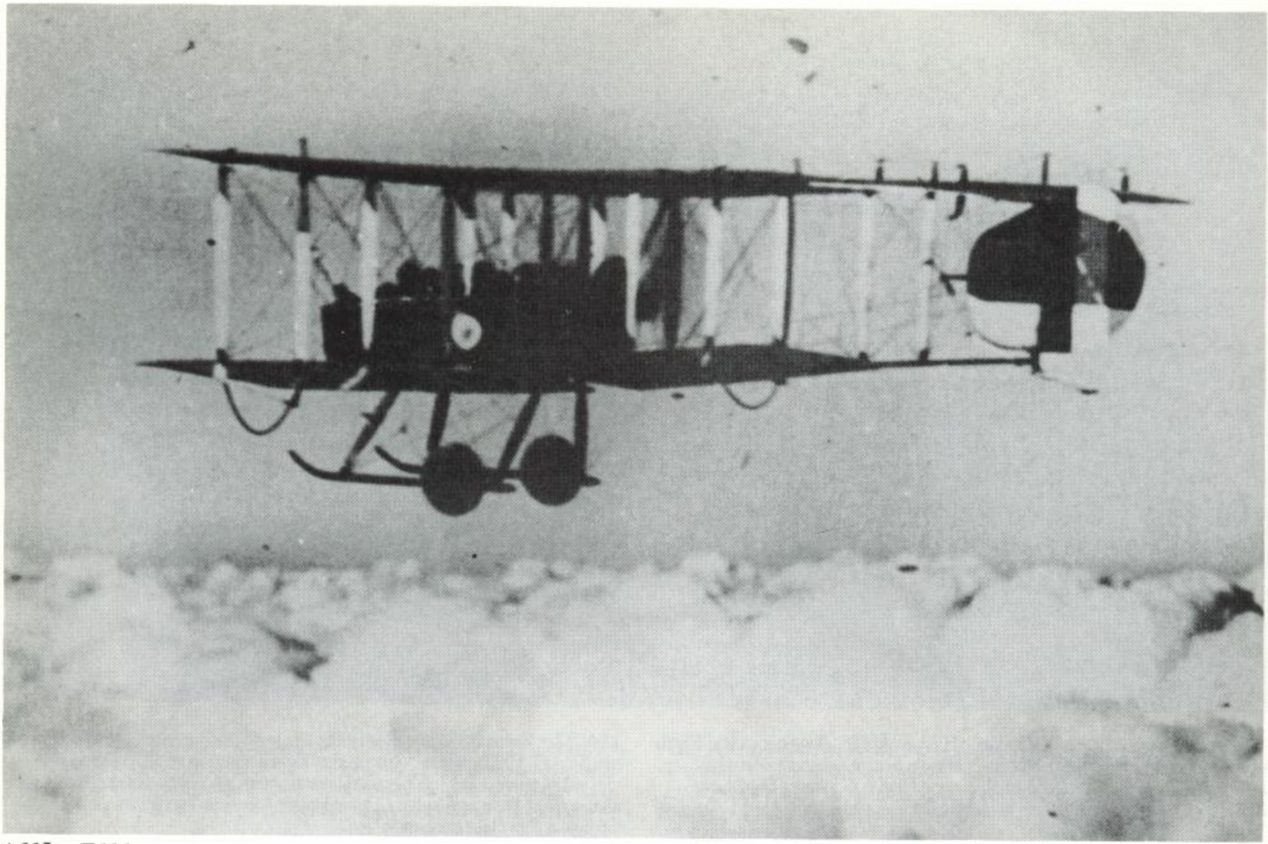
113. A Sopwith 2F1 Camel takes off from HMS *Pegasus* in the Firth of Forth. The 2F1 was the naval version of the famous Sopwith fighter; it was in a machine of this type that Lt. Stuart D. Culley flew from a towed lighter to bring down Zeppelin *L53* on 11 August 1918.

114. The French air ace *Capitaine* Georges Guynemer aboard one of his SPAD VII fighters. Guynemer flew a variety of SPADs and virtually all carried his personal motif *Vieux Charles* (Old Charlie) along their fuselage sides. The equally famous Stork insignia of *Cicognes 3* is clearly seen.

114▼





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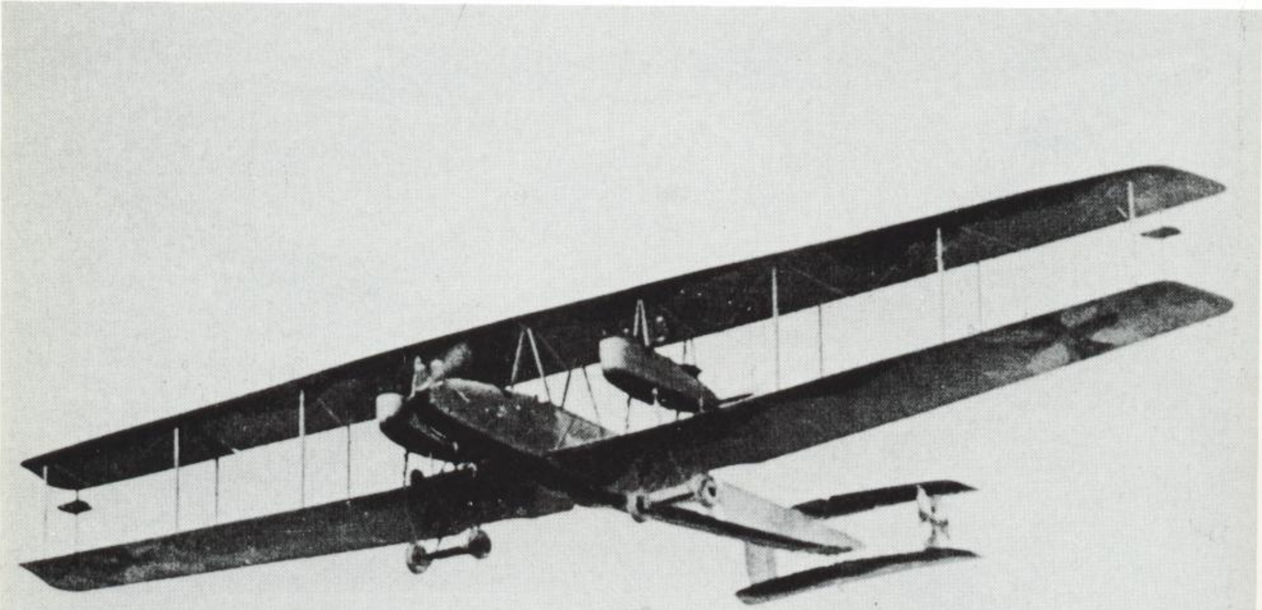

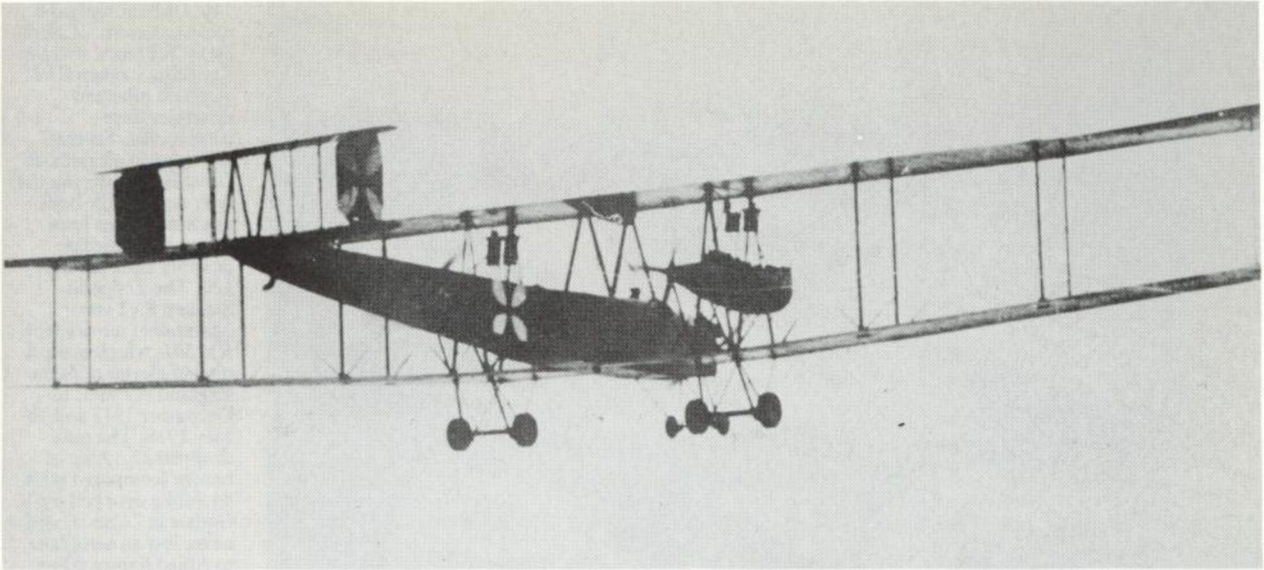

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115. The first Vickers FB5 machines were delivered to No. 6 Squadron at Netheravon in November 1914 and the type soon saw comparatively widespread service with the RFC in France. Following their withdrawal from service, the surviving FB5s were used in training units, whilst a few were built by the Danes under licence. (RAF Museum)

116. The Zeppelin Staaken 'R Plane' VGO III serialled 10/15 first flew in the late spring of 1916. The aeroplane completed about seven bombing missions, attacking railway installations, troop stations and depots, but was lost in a landing accident on 24 January 1917.

117. Staaken RIV 12/15 is seen here in its first form. This bomber had a fairly successful career and took part in several raids, including an attack on London during which it narrowly escaped destruction after colliding with a balloon apron guarding the capital. R12/15 was broken up after the war.

118. A further (and, indeed, the ultimate) development of the Staaken 'R Plane' design was the RXVI, the most powerful aeroplane built and flown by Germany during the war. Two examples were produced, and that illustrated is 50/17, constructed by Aviatik and completed a few months after the Armistice.

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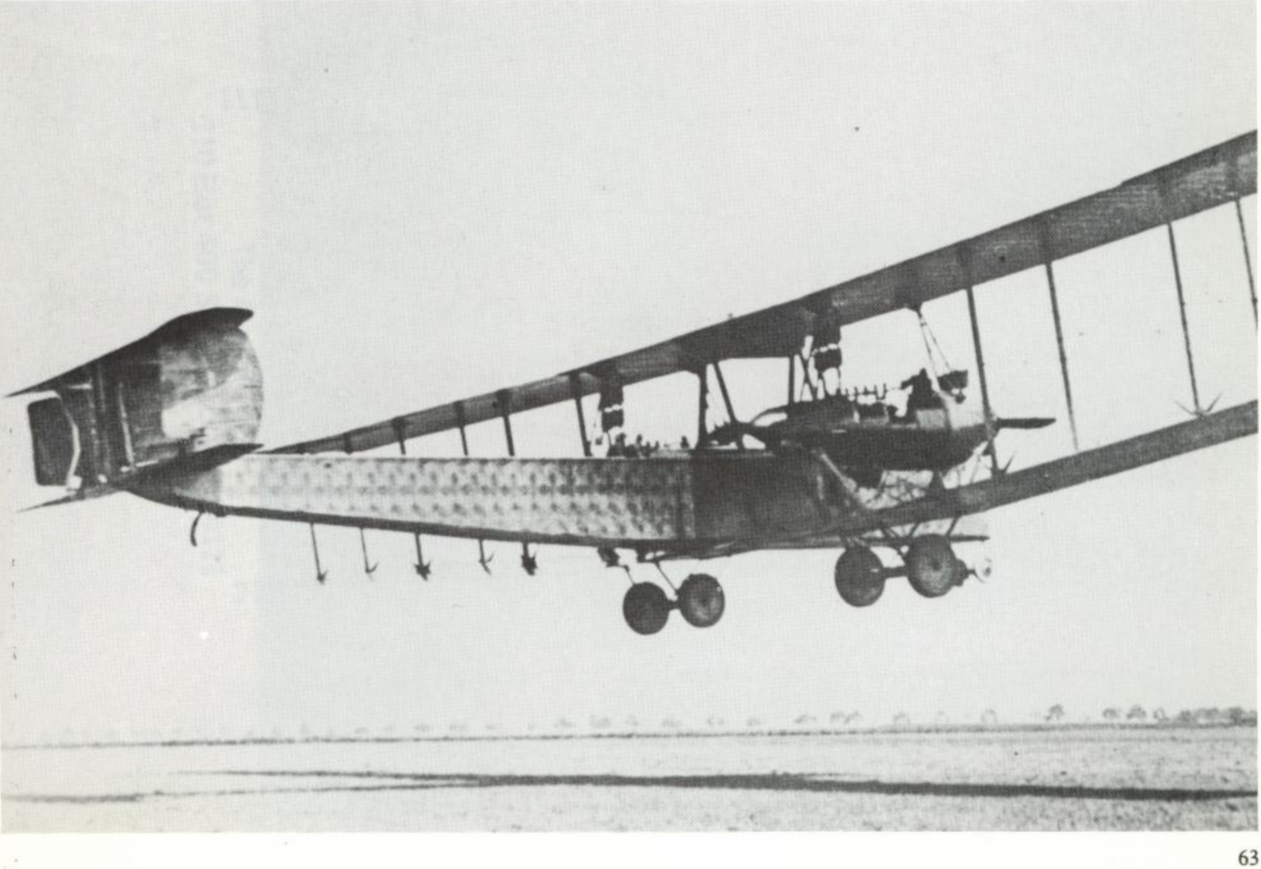

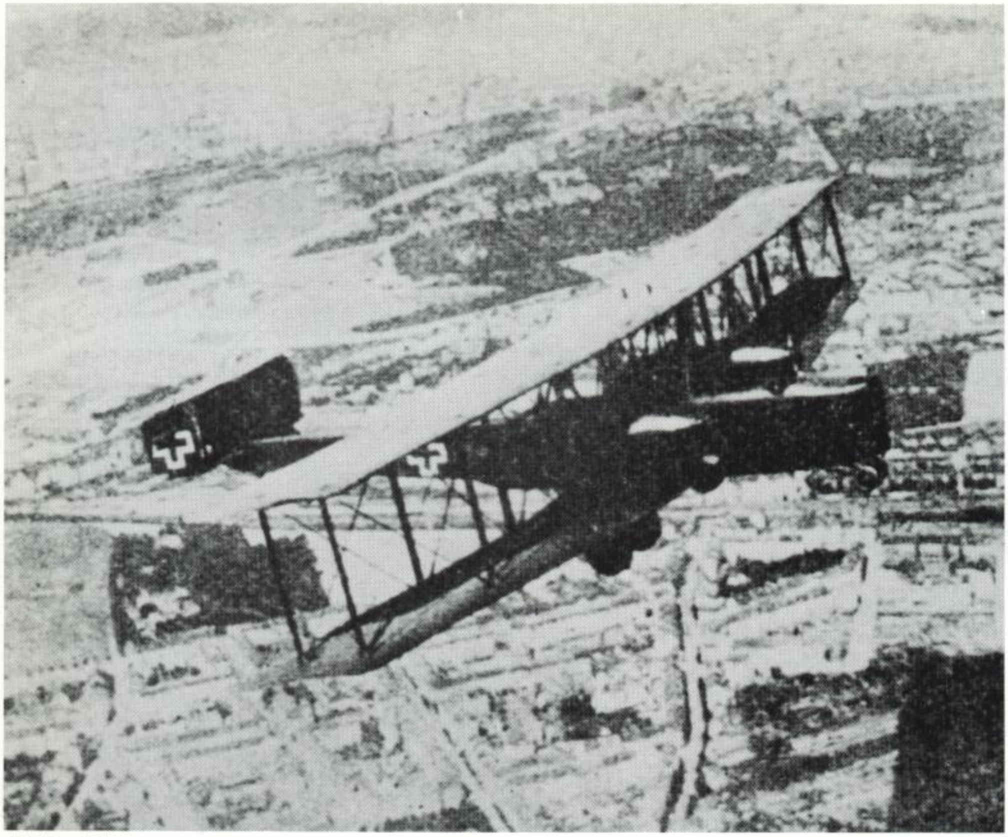

119. Undoubtedly the most successful of all the giant 'R Planes' was the Zeppelin Staaken RVI, of which nineteen examples were constructed. Several took part in air raids on Great Britain during the war. An Aviatik-built machine is seen here flying over Leipzig, possibly after the war.

120. The Zeppelin Staaken RVI saw operational service with *Rfa 501*, which made a total of eleven raids on England between 18 December 1917 and 20 May 1918. The unit dropped 27,190kg of bombs (compared with 84,745kg dropped by Gothas in 22 raids) and never lost an aeroplane to Allied fighter pilots.

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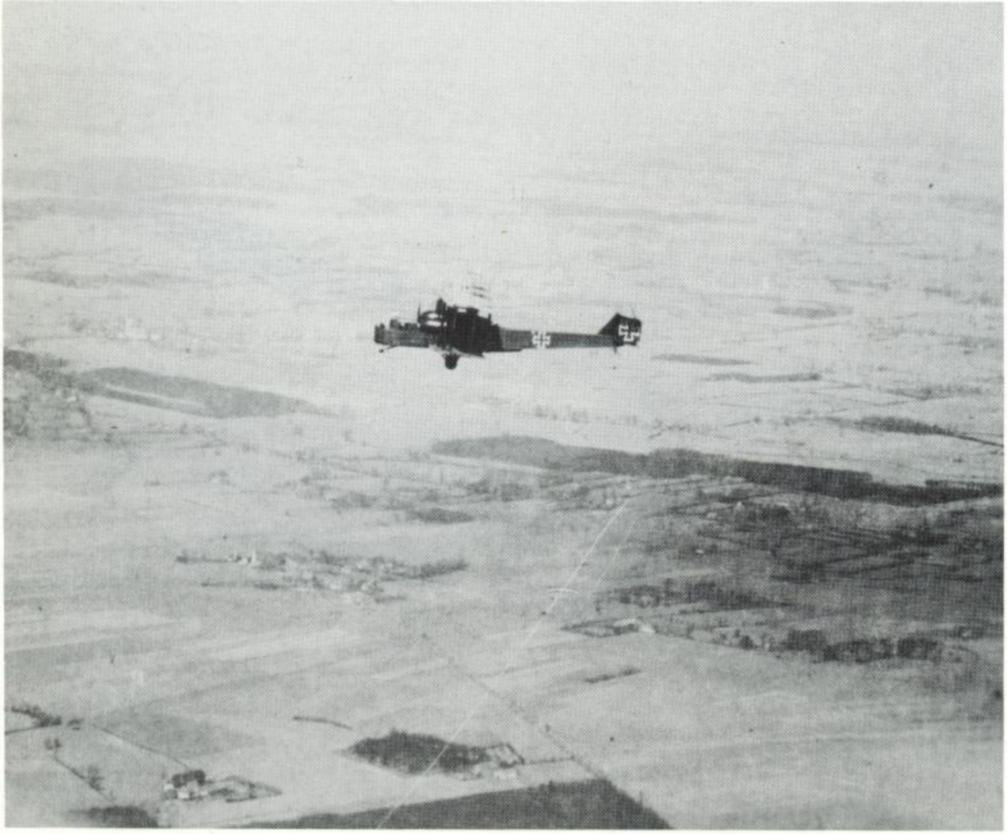

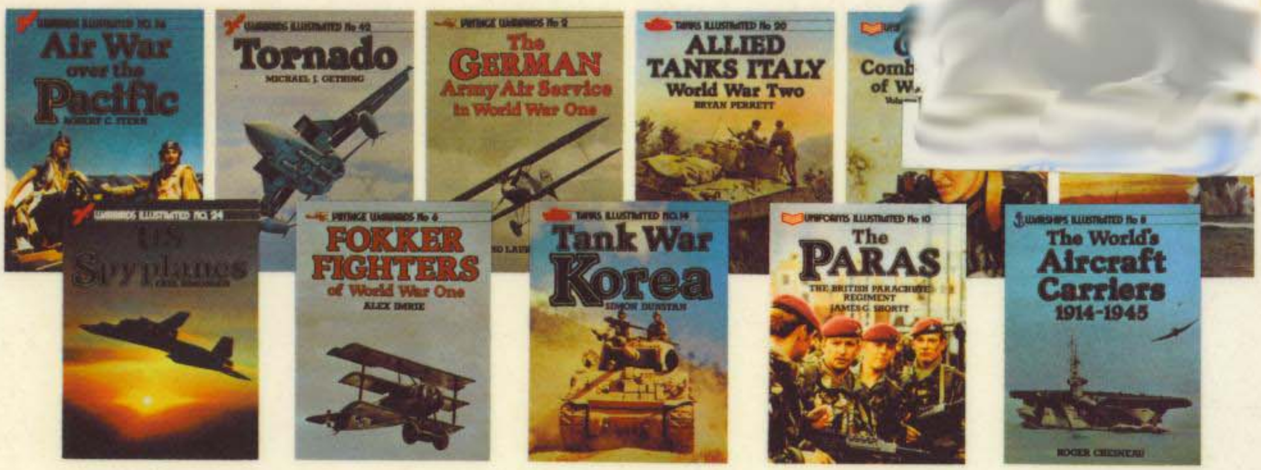

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